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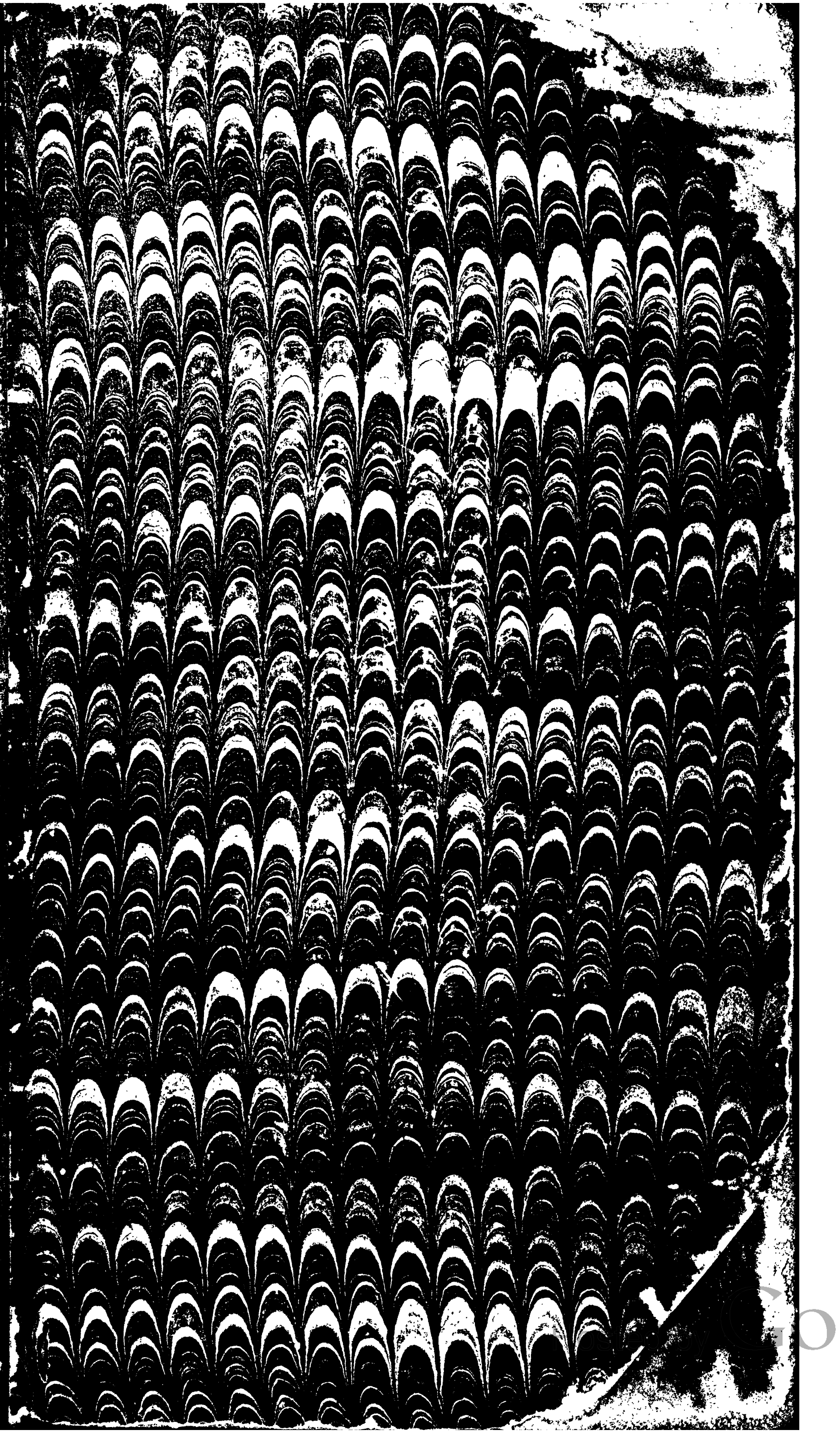

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CALENDAR

OF THE

UNIVERSITY OF MICHIGAN

FOR

1875-6

ANN ARBOR
PUBLISHED BY THE UNIVERSITY
1876

Courier Steam Printing House, Ann Arbor, Mich.

ANNOUNCEMENTS FOR 1876.

January	4.	University Exercises resumed after Holiday Vacation.
February	13.	*Semi-Annual Examinations begin.*
February	18.	*First Semester closes.*
February	21.	*Second Semester begins.*
March	13.	Juniors (Cl. and L. Courses) resume Latin.
March	28.	Recess of one week begins.
March	29.	THE PROFESSIONAL SCHOOLS CLOSE. COMMENCEMENT.
April	10.	Sophomores (Cl. and L. and Sc. Courses) begin History (elected).
April	10.	Sophomores (L. and Sc. Course) begin Geometrical Drawing (elected).
April	17.	Juniors (Cl. Course) resume French.
April	24.	MIDDLE OF THE SEMESTER.
April	24.	Sophomores (Sc. Course) resume History.
April	24.	Sophomores (Sc. Course) begin free-hand Drawing.
May	8.	Sophomores (Civ. Eng. Course) begin Descriptive Geometry.
May	24.	Juniors (Civ. Eng. Course) begin Field Work.
May	30–31.	Examination of Seniors.
June	21–23.	*Semi-Annual Examination.*
June	24–26.	*Examination of Candidates for Admission.*
June	25.	*Baccalaureate Address.*
June	27.	*Anniversary of the Society of Alumni.*
June	27.	Class Day.
June	28.	COMMENCEMENT. Summer Vacation begins.
Sept.	21–26.	*Examination of Candidates for Admission.*
Sept.	27.	FIRST SEMESTER BEGINS.

October	2.	PROFESSIONAL SCHOOLS OPEN.
November	8.	Juniors (Cl. Course) resume Greek.
November	27.	Sophomores (Civ. Eng. Course) begin Rhetoric.
November	27.	MIDDLE OF SEMESTER.
November	27.	Sophomores (Sc. Course) resume History.
November	27.	Freshmen (Sc. and Civ. Eng. Courses) begin Geometrical Drawing.
November	—.	Thanksgiving Recess of three days.
December	15.	Juniors (Sc. and L. and Sc. Courses) resume History.
December	22.	(Evening.) Holiday Vacation of Professional Schools begins.
December	22.	(Evening.) Holiday Vacation of the Literary Department begins.
1877.		
January	9.	Exercises of the Literary Department resumed.
February	16.	FIRST SEMESTER CLOSES.

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UNIVERSITY OF MICHIGAN.

THE UNIVERSITY AND THE STATE.

THE University of Michigan is a part of the public educational system of the State. The Constitution of the State provides for the perpetuation of the governing body of the Institution, the Board of Regents. They are elected for terms of eight years by popular vote. In accordance with the law of the State the University aims to complete and crown the work which is begun in the public schools, by furnishing ample facilities for liberal education in Literature, Science, and the Arts, and for thorough professional study of Medicine, Law and Dentistry. Through the aid which has been received from the United States and from the State it is enabled to offer its privileges without charge of tuition, to all persons of either sex, who are qualified for admission. Its relation to the public schools of the State has now become even closer and more vital than formerly, since under certain conditions the graduates of High Schools are received into the University without examination. While Michigan has endowed her University primarily for the higher education of her own sons and daughters, it must be understood that she also opens the doors of the Institution to all students, wherever their homes. Students from other States are asked to pay a larger admission fee than students from Michigan, but they receive their instruction and access to all the advantages of life at the University, without incurring any charge for tuition. It is in this broad, generous, and hospitable spirit that the University has been founded, and that it endeavors to do its work.

ORGANIZATION OF THE UNIVERSITY.

The University comprises the Department of Literature, Science and the Arts (including the School of Mines), the Department of Medicine and Surgery, the Department of Law, the Homœopathic Medical College and the Dental College. Each of these Departments and Colleges has its Faculty of Instruction, who are charged with the special management of it. The University Senate is composed of all the Faculties, and considers questions of common interest and importance to them all.

The Department of Literature, Science and the Arts, has six regular and full courses of four years each, and two shorter special courses. The regular courses are the Classical, the Scientific, the Latin and Scientific, the Greek and Scientific, the course in Civil Engineering, and the course in Mining Engineering. It is intended to offer also a full course in Architecture and Design at the beginning of the academic year, 1876–7. The special courses are the course in Analytical Chemistry, and the course in Pharmacy. Post graduate courses are provided for the graduates of this University, or for the graduates of any College or University, who may desire to pursue advanced study whether for a second degree or not. Students, who do not wish to pursue any one of the above courses may, if they are prepared to enter the University, pursue selected studies for such time, not less than one semester, as they may choose.

In the Department of Medicine and Surgery, the Department of Law, the Homœopathic Medical College and the Dental College the instruction is given largely by lectures. The lecture course begins on the first of October and continues to the end of March.

Students in any Department of the University may enter the classes in any other, upon obtaining permission from the Faculties of the respective Departments.

THE LIBRARIES.

The University Library contains about 22,500 volumes, and over 7,000 pamphlets. In 1871 it was enlarged by the addition of the library of the late Prof. Rau, the distinguished Professor of Political Economy in the University of Heidelberg, Germany. The Rau Library was purchased and presented to the University by Philo Parsons, Esq., of Detroit. It contains about 4,000 volumes, and over 5,000 pamphlets. It is especially rich in European works on the Science of Government, Statistics, Political Economy, and cognate subjects. An appropriation of about two thousand dollars is annually made for the enlargement of the University Library.

A Catalogue of the Library has been completed. It consists of two parts, a catalogue of titles on slips, arranged in the Alphabetical order of the names of the authors, and a catalogue of the subjects treated in all the books and reviews and magazines in the Library. This catalogue is accessible to all persons who use the Library.

Seventy-eight American and European periodicals are taken by the Library, and sixteen magazines and fifty-four newspapers, representing nearly every part of the country, are kept upon the tables of the Library by the Students' Lecture Association.

The Library is open every week day from 9 o'clock A. M. to 5 P. M., and from 7 P. M. to 9½ P. M.

The Medical Library, containing about fifteen hundred volumes, is in the room of the General Library. Twenty-two Medical Journals are regularly received.

The Law Library, kept in the second story of the Law Building, is open to the students of the Law Department, ten hours daily. It contains about three thousand five hundred volumes.

The two Literary Societies, in the Department of Literature, Science, and the Arts, have also good libraries.

The Christian Association connected with the University has a well selected Library of moral and religious works. Donations to this Library would be gladly received.

The Libraries accessible to the students amount, in the aggregate, to about 31,000 volumes.

THE ASTRONOMICAL OBSERVATORY.

The Observatory is a donation from citizens of Detroit. The building consists of a main part, with a movable dome and two wings, one of which contains the rooms of the observer, while in the other is mounted the splendid Meridian-Circle presented by H. N. WALKER, Esq., of Detroit. This instrument, one of the largest and best of the kind, and complete in every respect, was imported from Berlin. The same room contains a sidereal clock, made by TIEDE, in Berlin, and two collimators, north and south from the Meridian-Circle, for the determination of the error of collimation. The west wing contains a Chronograph, with Bond's new isodynamic escapement, for recording observations by the electro magnetic method. In the dome is mounted a large refracting telescope, with an object glass thirteen inches in diameter, constructed by the late Henry Fitz, of New York.

Students who make astronomy an optional study during the Senior year, or in the University Course, will have instructions in the use of the instruments, and will have an opportunity to participate in the observations.

THE MUSEUM.

The collections in the University Museum are illustrative of Natural Science, Ethnology, Art, History, Agriculture, Anatomy and Materia Medica, and are constantly increasing. During the past year numerous and important additions have been made in the departments of Geology, Zoölogy, Botany and Archæology. Prof. Harrington, while connected with the United States expedition to the Aleutian Islands, secured important ethnological and other additions to the Museum. Mr. J. B. Steere has just returned from a five years' journey in South America, Formosa and the East Indies, and has made very large and important collections for us. The following description will indicate the character of the collections now in the Museum :

I.—NATURAL HISTORY.

I. A choice collection of Minerals, embracing over six thousand specimens, principally European. This collection was purchased of the late Baron Lederer, and is called the "*Lederer Collection.*" Also a rich collection of the Mineral Species of Michigan, including all the varieties of *Copper Ore and Associated Minerals* from the different localities of the Lake Superior district. This collection is partly the fruit of the State Geological Survey, and partly the result of subsequent labors of Prof. Douglas.

II. The collection in Geology, consisting of:

1. The large and complete series of lithological and palæontological specimens brought together by the State Geological Surveys, of which over a hundred fossil species have already become the types of original descriptions.

2. The White Collection, consisting of 1,018 distinct entries and 6,000 specimens.

3. The ROMINGER COLLECTION, embracing about 2,500 entries and 6,000 specimens, mostly from the Mesozoic formations of Central Europe. This collection embraces 500 specimens of Mesozoic Ammonites.

4. SMITHSONIAN DEPOSITS, consisting for the present of a collection of foreign and domestic specimens of building stones, and 23 species of fossils from the Upper Missouri.

5. MISCELLANEOUS DONATIONS AND COLLECTIONS, embracing more than four cases illustrating the metalliferous regions of the Upper Peninsula, collected by Prof. WINCHELL.

An interesting collection of fossils, chiefly cretaceous, from the Yellowstone Valley, has been presented by General CUSTER, U. S. A.

The entire Geological Cabinet is estimated to contain about 14,000 distinct entries and 41,000 specimens.

III. A very large ZOÖLOGICAL COLLECTION, consisting of:

1. A complete suit of the *Birds which visit Michigan*, with most of the *Mammals of the State;* a nearly complete series of the *Reptiles found East of the Rocky Mountains;* two thousand species of *Mollusca*, embracing all the land and fresh-water forms of the Northern and Western States, and a considerable collection of the *Fishes* and *Radiata*.

2. The TROWBRIDGE COLLECTION. This is a series of 1,856 entries (3,000 specimens), in most of the classes of the Animal Kingdom, made by Lieut. TROWBRIDGE, (formerly Professor in the University), upon the Pacific coast, with numerous additions from the interior and eastern portions of the continent, supplied by the Smithsonian Institution.

3. A collection of about 5,000 Coleoptera and Lepidoptera from the estate of the late GEORGE L. AMES, M. D., of Niles.

4. SMITHSONIAN DEPOSITS, consisting of about 200 skins of birds from the Arctic Zone; 204 entries of marine shells from the Indo-Pacific, and Panama, labeled by Mr. P. P. CARPENTER; 81 entries of *Unionidæ;* 250 entries of miscellaneous shells; in all, 535 entries of fresh-water and marine shells.

5. THE STEERE ZOÖLOGICAL COLLECTION, comprising about 25,000 insects, 1,500 shells, 8,000 birds, and numerous representatives of other groups; total, about 10,000 entries and 60,000 specimens.

6. A collection of specimens illustrating COMPARATIVE ANATOMY. This collection contains several perfect, typical skeletons, and comprises 250 species, 1,000 specimens.

7. MISCELLANEOUS COLLECTIONS AND DONATIONS. The whole number of entries in the Zoölogical Cabinet is about 23,250, and the whole number of specimens over 110,000.

IV. A BOTANICAL COLLECTION, consisting of:

1. The plants of the State, collected by the public surveys, and numbering about 1,175 species, 15,000 entries, and 9,000 specimens.

2. The HOUGHTON HERBARIUM, collected by the late Professor DOUGLAS HOUGHTON, M. D., and presented to the University by his widow, the late Mrs. R. R. RICHARDS. It consists of 28 folio cases of dried and labeled plants from various parts of the United States, and is estimated to contain 1,800 species.

3. The SAGER HERBARIUM, presented by Prof. ABRAM SAGER, and containing about 1,200 species and 5,000 specimens, collected mostly in the New England and Western States.

4. The Dr. AMES HERBARIUM, consisting of a serial collection of 7,000 specimens, and 10,500 duplicates, presented by the family of the late Dr. AMES, of Niles, Michigan.

5. A collection of Alaskan plants, presented by Capt. W. H. DALL, of the U. S. Coast Survey.

6. A collection of 2,000 species of plants, presented by Prof. M. W. HARRINGTON.

7. A collection of 225 species of mosses from Central Europe, presented by Prof. PAUL REINSCH, Erlangen, Bavaria.

8. A collection of 408 species, over 800 specimens, of Algæ, from Mr. HORACE AVERILL.

9. THE STEERE BOTANICAL COLLECTION, which comprises 500 species, 2,500 specimens, mostly ferns.

10. THE ADAMS JEWETT COLLECTION, consisting of 2,500 species, 5,000 specimens. This collection was a part of the estate of ADAMS JEWETT, M. D., of Dayton, Ohio, and was presented by his heirs, through H. S. JEWETT, M. D., (1868), his son.

11. THE LEMMON COLLECTION of 460 species of California plants; presented by J. G. LEMMON.

12. A collection of 300 species from the AGRICULTURAL DEPARTMENT at Washington.

13. A collection of 3,000 German plants from S. S. GARRIGUES, State Salt Inspector, Saginaw.

14. A collection of truncheons of different varieties of woods from the United States, South America, China, and other countries.

15. A collection of the seeds of native and cultivated plants.

The whole Botanical Cabinet contains 10,000 species, 20,000 entries, and 70,000 specimens. The Geological, Zoölogical and Botanical Cabinets together, are estimated to contain 57,250 separate entries and 221,000 specimens.

II.—ARCHÆOLOGY AND RELICS.

This department of the Museum contains various articles of domestic and warlike use among the North American Indians, and the Islanders of the South Pacific; numerous remains of the ancient Peruvians; many specimens of clothing, art, etc., of the Amazonian Indians, Modern Peruvians, Chinese, Formosans, and natives of the East Indies and Alaska; and sundry relics and memorials of the enterprises of Peace, as well as of our great Civil War. It seems eminently appropriate that the University of Michigan should make efforts to preserve memorials of the native tribes, so fast disappearing before the march of civilization; and it is earnestly hoped that this department of the Museum may be deemed a suitable place of deposit for any such relics in the possession of our citizens. A number of interteresting relics from the Pacific Islands have been added by the Smithsonian Institution.

Efforts are making to found in the University a collection illustrating the materials, processes and products of agriculture and horticulture. The nucleus of such a collection already exist in—1st, The Botanical and Zoölogical Cabinets, and the Cabinets of Economical Geology; 2d, A collection of the seeds of cereals and other field and garden crops; 3d, An interesting collection of textile fibres and various substitutes for cotton, received from the Department of Agriculture at Washington.

III.—THE FINE ARTS AND HISTORY.

This collection was commenced in the year 1855, and at present comprises:

1. A Gallery of Casts, in full size and in reduction, of the most valuable *Ancient Statues and Busts*. These were mainly executed at the imperial modeling establishment of the Louvre, by DESACHY, of Paris, and by the Brothers MICHELI, of Berlin.

2. A Gallery of more than two hundred REDUCTIONS AND MODELS in terra cotta and other materials. These represent *Statues, Portrait Busts, Vases, and other Antiquities in the Museo Borbonico* and other European Museums. They were executed at Naples.

3. A Gallery of ENGRAVINGS AND PHOTOGRAPHIC VIEWS, executed in Italy and Greece, illustrating especially the *Architectural and Sculptural Remains of Ancient Rome, Pompeii, Paestum, Athens and Corinth.*

4. The *Horace White Collection of Historical Medallions*, comprising, first, four hundred and fifty *Casts from Antique Gems* in the Royal Museum at Berlin, illustrative of Ancient History; second, over five hundred *Casts illustrative of Mediæval History and of the Renaissance Period;* third, about four hundred *Medallion Portraits of Leading Personages in Modern History.*

5. A collection has been commenced of engraved copies of the great masterpieces of modern painting, beginning with those prior to Raphael.

6. The Statue of Nydia, and of Ruth Gleaning, by RANDOLPH ROGERS.

In addition to the above are several copies of *Modern Statues, Busts and Reliefs*, by MICHAEL ANGELO, CANOVA, THORWALDSEN, and others, the most valuable of which are copies in bronze of the Moses, and of the Augustino and Julian di Medici of Michael Angelo.

IV.—ANATOMY AND MATERIA MEDICA.

The University has become the owner of the valuable Anatomical Museum, formerly the property of Prof. FORD, the results of his labor for many years in the preparation and purchase of materials for the direct purpose of most successful teaching.

It embraces a valuable collection of bones, amply illustrating healthy as well as diseased conditions, likewise the various changes from infancy to old age.

It contains numerous skulls, teeth and other preparations of great interest and value, by which, not only the structure, but also the various stages in the development of both temporary and permanent teeth are well illustrated; as well as many valuable exhibitions of diseases of the teeth and associated parts, furnishing the Dental student important aid in the prosecution of his studies.

The *Arterial Preparations* are numerous, embracing complete and partial dissections, well preserved, exhibiting the normal as well as many abnormal arrangements of vessels, and furnishing ample facilities for studying the vascular system.

There are also Models in *Wax, Papier Maché, and Plaster,* of various parts of the body which they serve best to illustrate; and the Museum is rich in whatever can best advance the interests of the student.

The valuable collection of Prof. SAGER, illustrating the comparative craniology, neurology and embryology of the Vertebrata, and also the pathology and anatomy of the Diseases of Women, has been added to the property of the University, and to it accessions are annually made.

The department of the Museum illustrative of Materia Medica consists of a very complete suit of *crude Organic Medicinal Substances*, embracing between five and six hundred specimens, imported from Paris, put up in beautiful glass-covered half-gallon jars, of uniform appearance, finely displayed, and arranged according to their order in Natural History; besides about one thousand other specimens of *Simple Mineral and Vegetable Substances*, and *Pharmaceutical* and *Officinal Preparations*, *Active Principles*, etc., arranged in groups convenient for study.

Besides these actual specimens, Medical Botany is illustrated by between one and two hundred large and finely colored *Plates*, framed and glazed and displayed for observation.

All the above collections are arranged in galleries, for the purpose of rendering them accessible both to students and visitors. The University thus affords a secure depository for objects of value and curiosity, and it is, therefore, to be hoped that the Museum will receive accessions by donations from various sources.

DEGREES AND POST-GRADUATE COURSES.

The Degree of MINING ENGINEER is conferred upon students who complete the course and pass the examinations in the School of Mines.

The Degree of CIVIL ENGINEER is conferred upon students who complete the course of Civil Engineering, and pass the examinations in the same.

The Decree of PHARMACEUTICAL CHEMIST is conferred upon students who complete the course of Pharmaceutical Chemistry, and pass the examinations in the same.

The Degree of BACHELOR OF ARTS is conferred upon students who complete the Classical Course, and pass the examinations in the same.

The Degree of BACHELOR OF PHILOSOPHY is conferred upon the students who complete the Latin and Scientific Course, or the Greek and Scientific Course, and pass the examinations in the same.

The Degree of BACHELOR OF SCIENCE is conferred upon students who complete the Scientific Course, and pass the examinations in the same.

The Degree of DOCTOR OF MEDICINE and the Degree of BACHELOR OF LAW and the Degree of DOCTOR OF DENTAL SURGERY are conferred upon conditions which are given hereafter in the chapters descriptive of the Professional Schools.

The Degrees of MASTER OF ARTS, MASTER OF PHILOSOPHY, and MASTER OF SCIENCE will until 1877 be conferred respectively on Bachelors of Arts, Bachelors of Philosophy, and Bachelors of Science of three years' standing, who are graduates of this University. *But after 1877 these Degrees will not be conferred "in course."*

The Degrees of MASTER OF ARTS, MASTER OF PHILOSOPHY, and MASTER OF SCIENCE are conferred respectively upon Bachelors of Arts, Bachelors of Philosophy, and Bachelors of Science, upon examination, according to the following conditions:

I. (1.) The candidate must be a graduate either of this or of some other collegiate institution empowered to confer degrees.

(2.) He must pursue at least for a year two of the courses of post-graduate studies designated in the programme on the following pages.

(3.) He must sustain an examination before the Faculty in at least three of the studies so attended—the studies to be elected by the candidate.

(4.) He must present a thesis to the Faculty on one of the subjects chosen for examination.

The second Degree may thus be obtained, on examination, one year after the first degree.

The higher courses will not be restricted to graduates and candidates for the second degrees, but will be open to all who shall give satisfactory evidence of ability to profit by them.

II. These Degrees may be conferred respectively on BACHELORS OF ARTS, BACHELORS OF PHILOSOPHY, and BACHELORS OF SCIENCE, graduates of this University, who have not resided here since graduation, but who at a date not earlier than two years after graduation shall, on examination, show special proficiency in literary or scientific studies, and shall present a satisfactory thesis to the Faculty.

III. The Degree of DOCTOR OF PHILOSOPHY is open to the graduates of this University, or of any other reputable university or college, who shall have satisfied the Faculty on examination that they have made special proficiency in some one branch of study, and good attainments in two other branches to be specified by the Faculty. They will be expected to reside here, and to perform an amount of work which will occupy at least two years.

Persons, who are not graduates, will be received as candidates for this Degree, if they satisfy the Faculty that they have made attainments equivalent to those required here for the Degree of Bachelor of Arts, or Bachelor of Philosophy, or Bachelor of Science.

PROGRAMME OF STUDIES

FOR THE DEGREES OF M. A., M. P. AND M. S.

COURSES FOR THE FIRST SEMESTER.

Professor DOUGLAS.—*Chemistry and Mineralogy.*—A course of Qualitative Analysis, and of Blow-pipe Analysis of Minerals.

Professor FRIEZE.—*Latin Literature.*—The Roman Satirists.

Professor ADAMS.—*History.*—The Growth of Liberty in England.

Professor WATSON.—*Astronomy.*—Numerical Calculus; Theory of Interpolation and Quadratures; Method of the Least Squares.

Professor OLNEY.—*Mathematics.*—Differential and Integral Calculus.

Professor D'OOGE.—*Greek Language.*—History of Classical Philology.

Professor COCKER.—*Logic.*—Its History and Actual Influence on Thought and Language.

Professor MORRIS.—*French Literature.*

Professor GREENE.—*Civil Engineering.*—Theory of Constructions.

Professor PETTEE.—*Mineralogy and Lithology.*—A course of Determinative Mineralogy and Lithology.

Professor LANGLEY.—*Physics.*—Physical Manipulation.

COURSES FOR THE SECOND SEMESTER.

Professor DOUGLAS.—*Chemistry and Mineralogy.*—Course of Quantitative Analysis, with investigations, referring especially to the application of the Science to the Arts, Manufactures, and Agriculture.

Professor FRIEZE.—*Latin Literature.*—The Epistolary Writings of Pliny the Younger and the Works of Seneca.

Professor ADAMS.—*Constitutional History of the United States.*

Professor WATSON.—*Calculations* of the special and general Perturbations of Planets and Perturbations of Comets.

Professor OLNEY.—*Mathematics.*—Calculus of Variations.

Professor D'OOGE.—*Greek Literature.*—The Greek Lyric Poets.

Professor COCKER.—*General Culture.*—Theory of Taste; History of Philosophy.

Professor MORRIS.—*German Literature.*

Professor GREENE.—*Civil Engineering.*—Theory of Machines; Hydraulics.

Professor LANGLEY.—*Physics.*—The Mathematical Theory of Light and Sound.

EXPENSES.

The only charges made by the University are: To residents in Michigan, an admission fee of ten dollars, and the annual payment of fifteen dollars; to those who come from other States or countries, an admission fee of twenty-five dollars, and the annual payment of twenty dollars. A By-law of the Board of Regents provides as follows:

Every student before entering any department of the University, shall pay to the Steward the sum of ten dollars if a resident of Michigan, and the sum of twenty-five dollars if from any other State or country, as a matriculation fee. Each student shall also pay to the Steward annually fifteen dollars if a resident of Michigan and twenty dollars if a resident of any other State or country, to be devoted to the payment of incidental expenses. Resident graduates are required to pay the same annual dues as undergraduates, and no student or graduate shall be allowed to enjoy the privileges of the University except on presentation to the President of the Steward's receipt for all fees and dues specified in this or any other rule or regulation of the Board of Regents.*

The name of no person shall be presented by any Faculty to the Board of Regents for a degree, till he has exhibited to the Faculty the receipt of the Steward for the payment of all his dues, including the fee for diploma.

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* No portion of the fees can be refunded to students who leave the University during the academic year, except by order of the Board of Regents.

The admission fee is paid but once, and entitles the student to the privileges of permanent membership in any department of the University. The annual tax is paid the first year and every year thereafter.

There are no dormitories and no commons connected with the University. Students obtain board and lodging in private families for from three to five dollars per week. Clubs are also formed, in which the cost of board is from one dollar and a half to two dollars and a half per week.

It is proper to say, in answer to numerous inquiries, that the University does not undertake to furnish manual labor to students. Yet a considerable number of the students find in the city opportunities for remunerative labor.

Room rent varies from seventy-five cents to two dollars per week for each student.

The annual expenses of students in the Academic Department for the last few years, *including clothing and incidentals*, have been on the average, about $370. The expenses of Professional students are from $150 to $200 per term of six months.

BY-LAWS CONCERNING ADMISSION.

1. To the Academic Department. Every candidate for admission, when coming from another Collegiate Institution, shall exhibit a certificate of honorable dismission.

Every candidate for admission to the Freshman Class shall pass an examination satisfactory to the Faculty, in the preparatory studies as required by the rules; and every applicant for an advanced standing shall be examined not only in the preparatory course, but also in all the previous studies of the class which he proposes to enter.

No student can be admitted to the Department whose age is less than sixteen years.

2. To the Law Department. No student shall be admitted to this department who has not attained the age of eighteen years, nor

until he has presented to the Faculty evidence of a good moral character.

3. To the Medical Department. Every candidate for admission shall exhibit to the Faculty satisfactory evidence of a good moral character, and of a good preparatory English education.

4. To the Homœopathic Medical College. The same requirements as in (3).

5. To the Dental College. The same requirements as in (3).

RELATIONS OF STUDENTS TO THE CITY GOVERNMENT.

Students are temporary residents of the city, and, like all other residents, are amenable to the laws. Whenever guilty of disorder or crime, they are liable to arrest, fine, and imprisonment, and can claim no peculiar exemption from public disgrace and legal penalties.

DEGREES CONFERRED

DURING THE YEAR.

PHARMACEUTICAL CHEMIST.

Charles Baum,
John Clarence Burt,
Nicholas G. O. Coad,
Otis Bowman Dickinson,
Oakley Griggs,
Charles Henry Hopper,
Calvin Starbuck Johnson,
Jacob Lawrence Leist,
Joseph Clark Moss,
James Howard Salls,
William Christian Staehle,
Alviso Burdett Stevens,
Henry Abner Tremain,
William Henry Wells, B. A.,
Alva C. Whitman,
George Elliott Wilmarth,
Charles Wood,
Abram Van Epps Young.

CIVIL ENGINEER.

Albert Llewellyn Arey,
Lucius Baker,
Charles Cutler Baldwin,
Henry David Bates,
Ben Birdsall,
Charles Luman Buckingham,
Charles Alexander Carnefix,
Rolla C. Carpenter, B. S.,
Leman Lee Dickinson,
J. Clement Eaton,
Emerson Warren Grant,
Joseph Warren Hoover,
John Henry Morrison,
Martin Luther Newton,
George E. Pantlind,
Edward Ira Parsons,
William Hobart Potter,
Edgar Dean Root,
Walter S. Russel,
Marcus Jonathan Wells.

BACHELOR OF SCIENCE.

William Francis Bigelow,
Willard Irving Brotherton,
Charles Whitefield Clark,
Deloss Fall,
Horatio Clark Ford,
Edwin Lockwood Mills,
Herman Merton Roys,
Alexander Hawks Seelye,
John Franklin Shafroth,
James Henry Shepard,

George Ludlow Fox,
Adelbert George Gumaer,
Walter Jacob Heyser,
Caroline Irene Hubbard,
Oscar Pliny Shepardson,
William Thomas,
Harriet L. Winslow,
Franklin Pierce Wood.

BACHELOR OF PHILOSOPHY.

George Hazelton Abbott,
Emma Cornelia Andrews,
Martha Angle,
Frank Webster Ball,
James Madison Barrett,
George Allen Briggs,
Frank H. Culver,
Charles William Dorsett,
Frank Ward Fletcher,
Thomas Fred. Graber,
Fred Walter Harris,
Eugene Ralph Hutchins,
Andrew Josiah McGowan,
James Benoni McMahon,
Irving Nelson Mitchell,
De Witt J. Oakley,
Enos David Pierson,
John Joseph Stoddart,
Ella Thomas,
Percy Ripley Wilson,
Abram Van Epps Young.

BACHELOR OF ARTS.

Charles Henry Aldrich,
San Louie Anderson,
Irving Willis Barnhart,
David Alonzo Bixby,
Charles Sumner Burch,
John Fletcher Burris,
Benjamin Chapman Burt,
Angie Clara Chapin,
William Rice Clark,
Emily Persis Cook,
Norman Philip Cook,
Rolla Tileston Cushing,
Lorenzo Davis, Jr.,
William George Doty,
Charles Fred Field,
Lorenzo Varnum Fletcher,
Charles Fox,
William Fanning Gelston,
Charles Pierce Gilchrist,
Henry Harrison Hahn,
Charles Taylor Harris, Jr.,
George Stedman Hosmer,
Charles Huntington Jacobs,
Bronson C. Keeler,
Jerome Cyril Knowlton,
Leslie Coombs McPherson,
Willoughby Dayton Miller,
Edwin Clarence Oakley,
Arthur Gordon Oven,
Jonathan Willis Parker,
Fred A. Platt,
Henry John Robeson,
Stewart Whedon Smith,
Augustus J. C. Stellwagen,
John Alexander Stewart,
Lelia Alice Taber,
Thomas Elwood Taylor,
Will C. Turner,
Horace A. J. Upham,
Willis Lyon Watkins,
James Dwight Wells,
Welles Whitmore.

MASTER OF PHILOSOPHY (*in course*).

Elroy McKendree Avery,
Charles Lester Houseman.

MASTER OF SCIENCE (*in course*).

Horatio Nelson Chute,
Samuel Hayes,
Lester McLean,
Frank Taylor Seeley.

MASTER OF SCIENCE (*on examination*).

Victor Clarence Vaughn, B. S.

MASTER OF ARTS (*in course*).

Edward Mills Adams,
Arthur Clark Adams,
Frank Davis Andrus,
Charles Tupper Beatty,
Sidney Brownsberger,
Robert Emmet Bunker,
Henry Fairfield Burton,
George Edward Cochrane,
John Frederick Dutton,
Edwin Fleming,
Frederick Lyman Geddes,
Walter Sutherland Harsha,
William Stone Haskell,
Jerry Hillegass,
Henry Smith Jewett,
Joseph Comstock Jones,
Charles R. Whitman,
Hiram Morse Keeler,
Marmaduke Burnell Kellogg,
John Jameson Mapel,
John Wellington Morton,
Edward Waldo Pendleton,
Monroe Benjamin Snyder,
Russell F. Tinkham,
Ernest William Von Schreeb.

MASTER OF ARTS (*on examination*).

Marcellus Warner Darling, M. A.,
Emma Maria Hall, B. A.,
Sarah Dix Hamlin, B. A.

DOCTOR OF MEDICINE.

J. Judson Alleman,
Hiram William Austin,
Neil A. McCallum,
Morris D. McCandless,

Martin Wright Bacon,
George Griswold Baker,
Newton Baldwin,
Solon Briggs,
Oliver Boyer Campbell,
William Newton Case,
Robert M. Cotton,
George Sylvester Darling,
David French Dayton,
Sylvester B. Davis,
Frank Harris Durstine,
Rufus Alvin Egbert,
Daniel W. Finlayson,
Edmund Fitzpatrick,
Marvin Fosdick,
Clinton Rogers Green,
John Alexander Gunn,
Allen F. Hagadorn,
George Martin Harrison,
George Harvey,
Will J. Herdman,
Lewis Edward Higbee,
Marion Holland,
Joseph B. Hosken,
Charles Wallace Hubbard,
Guy Hutchins,
Frederick D. Jenkins,
Colonel M. Johnson,
John Calvin Keeney,
Louis Lorenzo Kelley,
Martin Kelley,
William John Ketcham,
Edwin Leroy Kimball,
John Hillis Kirk,
Robert Richard Lawrence,
Henry D. Livingstone,
Leander Erastus Maddox,
Henry McCrea,
Frank S. McKibben,
Richard Murphy,
Ormond P. Paulding,
George Chaney Pease,
Richard J. Piper,
Charles V. Porter,
Justin E. Post,
John U. Raymond,
Edwin James Rothwell,
Edward J. Rowe,
George Elmer Sanford,
George Gordon Shannan,
Henry Lewis Steiner,
Edwin Augustine Swan,
John J. Thomson,
Robert Tremper,
Clifford Afton Turner,
Charles Ultes,
William Cyrenus Upjohn,
William E. Upjohn,
Clark Watson,
Freeman S. Williams,
Olin Seymour Wright,
Josephine Shaw Briggs,
Elizabeth Lord Deuel,
Seraph Frissell,
Adele A. Gleason,
Elizabeth Hait Gerow,
Sophia Hartley,
Caroline A. Hollister,
Eliza Maria Mosher,
A. Adelaide Richardson,
Eliza Ann Shaw,
Mattie Cochrane Strong,
Mary Lucinda Vincent,
Marie J. Walker.

BACHELOR OF LAWS.

Nathan James Aldrich,
Frank L. Axtell,
Edwin Irving Ayer,
Alvin Withrow Kumler,
Robert Laidlaw,
William Henry Leas,

Theron Wilson Atwood,
Charles Frederick Baird,
Samuel Pitcher Barstow,
Rogers Wilson Berry,
Myron Edgar Bishop,
Edward Peter Blickensderfer,
Andrew Horace Bowman,
William Thomas Brooks,
Andrew Jerome Brown,
James Perry Wertz Brown,
Cornelius McGuire Burgess,
Berthemus Marcellus Cade,
John Porter Cameron,
Isaac Pennington Campbell,
George Washington Chalendar,
Byron William Cheever,
Charles Carroll Cheney,
John B. Clayberg,
Joseph Clinton Coffman,
Charles Ogden Coleman,
Rauseldon Cooper,
Lucius Juna Copps,
Griffin Corey, Jr.,
Isaac B. Craig,
George Johnson Cummins,
Charles Henry Dane,
Isaac Delano,
William Edgar Depew,
Wallace Burton Douglass,
David Elias Dozer,
Robert Emmet Dunn,
J. Milo Eaton,
John H. Eckles,
Lewis Hitchcock Estabrook,
Henry Brown Fallass,
Harry H. Francis,
Eugene Koelbing Frueauff,
John Galloway,
Cromwell Galpin,
Edward R. Gilday,
William Barnes Given,
Clark Hough Gleason,
James Riley Goss,
John Conlon Greening,
Roswell Leavitt,
Andrew Taylor Lewis,
Hood Pratt Loveland,
Albert Malden Mackerley,
Anthony D. Marshall,
Ellen Annette Martin,
John W. McGindley,
Lester McLean,
William Payson Mellen,
Norman Clensea Morgan,
James Beatty Muir,
Louis Kossuth Myers,
John Seaman Nelson,
John Crane Orr,
Theobald Otjen,
James Albert Outland,
William Carroll Outten,
Peter Packard,
Chas. James Pailthorp,
L. Holden Parker,
John William Parks,
Aaron Perry,
Mary Fredreka Perry,
Mark Ward Phelps,
George Edgar Putnam,
John Charles Rabaut,
Daniel Keller Ramey, Jr.,
Frank Henry Reshore,
George H. Reynolds,
Elisha J. Richmond, Jr.,
William Arthur Rose,
George Carlos Ross,
Elbert Warren Rossman,
Henry Russell,
Alexander Sampson,
Clark Bates Samson,
Perley Kilbourn Scott,
Thomas Francis Shields,
Barton Smith,
George Whitman Smith,
Horace Lee Smith,
John Henry Smith,
William Laselle Snell,
Zera L. Snow,

Abram Gridley,
Levi De Groff Groom,
Seneca Haselton,
Sinclair Johnson Hatfield,
William Miles Hawkins,
Wayne Hayman,
Frank Herald,
Ernest Clarence Herrick,
William J. Hill,
Edwin Craig Howe,
Charles Patrick Huey,
Isaiah Hunsberger,
Alexander Thomas Hurst,
George King Ingham,
Philip Augustus Inglesby,
James Oscar Jefferys,
Joel Bradford Jennings,
Edward Mead Johnson,
Ephraim Morgan Jones,
Swan Judy,
Edward James Kennard,
Job South,
George Harvey Southworth,
Frank Vance Sowles,
Charles A. Manly Spencer,
John Wesley Stanley,
Gilbert Montague Stark,
William Richard Starr,
Charles Cummings Stewart,
Henry Clark Stewart,
Harry J. Stimpson,
William Rush Taggart,
Charles Augustus Terhune,
Arthur Rollin Tripp,
Dean Merrill Tyler,
William Henry Utt,
George Milton Valentine,
Arend Visscher,
Leroy Hibbard White,
Eugene Wilson,
George Wenzell,
Eugene B. Woodruff.

HONORARY DEGREES.

DOCTOR OF PHILOSOPHY.

Joseph Beal Steere.

DOCTOR OF LAWS.

George Ripley.

DEPARTMENT
OF
LITERATURE, SCIENCE, AND THE ARTS.

REQUIREMENTS FOR ADMISSION.

All candidates for admission to the Freshman Class must be at least sixteen years of age, and must present satisfactory evidence of good moral character.

I.—CLASSICAL COURSE.

Candidates for this course will be examined in the following studies:

1. English Language.—*Grammar.* Hart's composition and Rhetoric, with special attention to Chapter I., Part I., on Punctuation and Capitals; to Chapter VI., Part I., on Versification; and to Chapters VIII. and IX., Part II., on Proof-Reading, and on the Study of the English Language.

2. Geography.—General facts of Physical Geography, the Political Geography of Europe and the United States, and ancient Geography, particularly that of Italy, Greece, and Asia Minor.

History.—In Grecian History, the first *three* books of Smith's History of Greece, exclusive of the chapters on Literature and Art; an outline of Roman History, from the foundation of the city to the battle of Actium; and of the History of the United States, to the close of the Revolutionary War.

4.—Mathematics.—*Arithmetic.* Fundamental Rules, Fractions, Common and Decimal, Denominate Numbers, Percentage, Proportion, Involution and Evolution.

Algebra.—Fundamental Rules, Fractions, Simple Equations, Elimination, Involution and Evolution, the Calculus of Radicals, Quadratic Equations, Ratio, Proportion and the Progressions, and an elementary knowledge of Logarithms: *i. e.,* through Olney's Complete School Algebra, or an equivalent in other authors.

Geometry.—Plane, Solid, and Spherical Geometry: *i. e.*, the first two parts of OLNEY'S GEOMETRY, or an equivalent in other authors.

5. LATIN.—*Latin Grammar.*—Harkness's, or Allen and Greenough's.

Prose Composition.—Harkness's Introduction to Latin Composition, from page 50 to page 166; or forty-four exercises in Arnold's Latin Prose Composition; or an equal amount in Allen and Greenough's Latin Prose.

Reading.—Four books of Cæsar's Commentaries; Six Select Orations of Cicero, and the whole of the Æneid; or the first six books of the Æneid and an amount either of prose or of poetry equivalent to the last six books.

In reading the last six books of the Æneid, the principal aim should be to acquire facility in translation, and increased knowledge of the Latin vocabulary. It is supposed that the student, already familiar with the style of Virgil, will be able to read this portion of the Æneid more easily and rapidly than an equal amount in any other text-book.

The *Roman Pronunciation of Latin* has been adopted.*

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* ROMAN PRONUNCIATION OF LATIN.—The University has adopted the following system of pronunciation, based upon the investigations of Corssen and other eminent philologists, and now employed in its essential features in the Universities and leading schools of England, and in Harvard. Cornell, and other institutions of this country; as being proved beyond question a close approximation to the Roman pronunciation in the time of Cicero.

VOWELS.

Long.	*Short.*
a as in father.	a as in amend, or in quaff, (not as in hat).
e as in they.	e as in met.
i as in machine.	i as in pity.
o as in go.	o as in police, (not as in cot).
u as in oo in too.	u as in pull (not as in but).
y as i.	

DIPHTHONGS.

In pronouncing the diphthongs the sound of both vowels is preserved.

ae as the word ay.
au as ow in power.
oe as oi in oil.
eu nearly like u in use.
u in ua, ue, &c., like w.
ei as in rein.

CONSONANTS.

c always as in can.
ch as k.
g always as in gun.
j always as y in young.
s always as in sin.
t always as in tin.
v either as Fr. ou in oui, or like Eng. v.

There is still considerable diversity of opinion among scholars as to the correct sound of v, and though the sound of ou in the French oui, or practically the sound of our w, is given to this consonant here, the sound of English v may be given, if preferred. The other consonants are sounded as in English.

The rules for syllabication are the same as in the old pronunciation, where two consonants come together; but a single consonant between two vowels is to be joined in pronunciation with the latter.

SYNCHRONISTIC TABLE OF CLASS EXERCISES AND LECTURES IN THE SEVERAL COURSES.

		CLASSICAL COURSE.	SCIENTIFIC COURSE.	LATIN AND SCIENTIFIC.*	CIVIL ENGINEERING.	SCHOOL OF MINES.
FRESHMAN.	1st SEMESTER.	Latin:—1....1st Div 10½, 2d Div. 9½. Greek:—1....2d Div. 8¼, 1st Div. 9½. Math:—1....2d Div. 9½, 1st Div. 8¼. English Exercises: †....Fridays, 4.	Geom. Draw.:—½ ....2d Div. 8¼ to 10½. 1st Div. 9½ to 11½. Desc. Geom.:—1-2 ....1st Div. 10½ to 12½. 2d Div. 3 to 5. French:—1....2d Div. 10½, 1st Div. 11½. Math.:—1..1st Div. 10½, 2d Div. 3, 3d Div. 11½. English Exercises ....Fridays, 2.	Latin:—1....8¼. French:—1 ....11½. Math.:—1....4. English Exercises ....Fridays....2.	Geom. Draw.:—½....2d Div. 8¼ to 10½. 1st Div. 9½ to 11½. Des. Geom.:—1-2....10½. French:—1....2d Div. 10½, 1st Div. 11½. Math.;—1..1st Div. 10½, 2d Div. 3, 3d Div. 11½. English Exercises....Fridays....2.	Drawing:—½ ....8¼. Desc. Geom.:—½ ....10½. French:..1....11½. Math.:—1....3. English Exercises..Fridays,....2.
	2d SEMESTER.	Latin:—1....1st Div. 10½, 2d Div. 9½. Greek:—1 ....2d Div. 10½, 1st Div. 9½. Math.:—1 less 30 l..2d Div. 9½, 1st Div. 10½. Botany:—30 l.... 1st Div. 3, 2d Div. 11½. English Exercises....Friday, 4.	Math.:—1.... 1st Div. 9½, 2d Div. 10½. French:—1....1st Div. 10½, 2d Div. 11½. Eng. Language:—1-2....3. Botany:—1-2....4. English Exercises....Fridays, 2.	Latin:—1....8¼. French:—1.... ..11½. Math.:—1 less 30 l....9½. Botany:—30 l....11½. English Exercises....Fridays....2.	Math.:—1....1st Div. 9½, 2d Div. 10½. French:—1....1st Div. 10½, 2d Div. 11½. Eng. Lang:—1-2 ....3. Rhetoric:—1-2 ....11½. Botany:—Optional, 30 l....4. English Exercises....Fridays....2.	Math.:—1....9½. French:—1....10½. Chemistry:—1 ....11½. English Exercises..Fridays,....2.
SOPHOMORE.	1st SEMESTER.	Latin:—1-2.... 1st Div. 9½, 2d Div. 10½. Greek:—1-2....1st Div. 10½, 2d Div. 11½. English Literature:—1-2....3. Rhetoric:—1-2 ....3. Math.:—1....1st Div. 2, 2d Div. 3. Essays: †....Mondays and Tuesdays, 2.	History:—1....11½. French:—1 ....9½. Math.:—1....2. Essays..Wednesdays and Thursdays....3.	Latin:—1....1st Div. 9½, 2d Div. 10½. French:—1....11½. Math.:—1....4. Essays....Wednesdays and Thursdays..3.	Physics:—1....11½. German:—1 ....9½. Math.:—1 ....2. Essays..Wednesdays and Thursdays....3.	Physics:—1....11½. German:—1 ....9½. Math.:—1....2. Essays..Wednesdays and Thursdays....2.
	2d SEMESTER.	Latin:—1....1st Div. 9½, 2d Div. 10½. Greek:—1....2d Div. 3, 1st Div. 4. Math.:—6 w.... 1st Div. 3, 2 Div. 2. Math. or Hist.:—1 less 6 w....3. Essays:—Mondays and Tuesdays....2.	Math.:—1-2 ....3. Free-Hand Drawing:—1-2....10½. or Perspective:—1-2 ....8¼. English Lit.:—1-2....4. Rhetoric:—1-2 ....4. French:—1-2 ....9½. History:—1-2....3. Essays..Wednesdays and Thursdays....4.	Latin:—1-2....1st Div. 9½, 2d Div. 10½. Desc. Geom.:—1-2....9½. Eng. Lit.:—1-2 ....3. Rhetoric:—1-2....3. Math.:—6 w ....2. Geom. Draw.:—1 less 6 w....2 to 4. or Math. or History:—1 less 6 w....3. Essays..Wednesdays and Thursdays....4.	Math.:—1 ....2. Chem.:—1 ....11½. German:—3-5....9½. Des. Astronomy:—2-5....10½. Essays..Wednesdays and Thursdays....2.	Mathematics:—1-2 ....2. Perspective Drawing:—1-2..8¼ to 10½. German:—3-5 ....9½. Des. Astronomy:—2-5....10½. Anal. Chemistry:—1....11½. Essays..Wednesdays and Thursdays....2.
JUNIOR.	1st SEMESTER.	Physics:—1....1st Div. 9½, 2d Div. 11½. History:—6 w ....3. Greek:—1 less 6 w....1st Div. 3, 2d Div. 4. French:—1 ....1st Div. 8¼, 2d Div. 9½. Speeches ....4-6.	Physics:—1....1st Div. 9½, 2d Div. 11½. Biology:—1 less 6 w....10½. or Surveying:—1 less 6 w....8¼ to 11½. History:—6 w ....3. German:—1....11½. Speeches....4 to 6.	Physics:—1 ....1st Div. 9½, 2d Div. 11½. Biology:—1 less 6 w....10½. or Surveying:—1 less 6 w ....8¼ to 11½. History:—6 weeks ....3. German:—1 ....11½. Speeches....4 to 6.	History:—1-2....11½. Topog., Draw. and Lettering:—1-2..10½. Surveying:—1 less 6 w....8¼ to 12½. Higher Astronomy:—6 w ....11½. Mathematics:—1 ....3.	Mineralogy and Lithology:—1....11½. Surveying:—1 less 6 w....8¼ to 11½. Mineralogy or Blow-pipe Analysis:—6 w....8¼ to 10½. Anal. Chem.:—1 ....2 to 4.
	2d SEMESTER.	Chemistry:—1....11½. Greek:—3 w ....3. Latin:—1 less 3 w....9½. Astronomy:—2-5....10½. French:—3-5....9½. Speeches ....4-6.	Chemistry:—1....11½. German:—1 ....8¼. or Anal. Mechanics, or Lab. Physics..1, 4. Astronomy:—2-5 ....10½. Zoölogy:—3-5 ....10½. Speeches....4 to 6.	Chemistry:—1....11½. German:—1....8¼. Latin:—1 less 3 w....9½. Astronomy:—2-5 ....10½. Speeches....4 to 6.	Surveying:—1....10½ to 12½. Field Work:—4 w....8 and 1. Anal. Mechanics:—1 less 4 w....4. Shades and Shadows, Perspective and Stereotomy:—1....8¼ to 10½.	Quan. Anal. & Assay.:—1 less 4 w., 2 to 4. Anal. Mechanics:—1 less 4 w ....4. Mine Surv'ng or Geology:—1, 10½ to 12½. Field Work:—4 w....8 and 1.
SENIOR.	1st SEMESTER.	Logic and Psychology:—1....9½. Electives. *Latin and Greek:*—1 ....11½. *Mineral. and Lith.:*—3-5 ....11½. *Paleontology:*—2-5 ....11½. *German:*—1....10½. *Political Economy:*—1-2 ....3. *History:*—1....4. *Astronomy:*—1 ....2. *Chemistry:*—1....8¼. *Surveying:*—1....8¼. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Logic and Psychology:—1....9½. Electives. *German:*—1....10½. *Political Economy:*—1-2 ....3. *History:*—1....4. *French:*—1-2 ....3. *Chemistry:*—1.... 2 *to* 4. *Mineral. and Lithol.:*—3-5.... 11½. *Paleontology:*—2-5 ....11½. *Astronomy:*—1 ....2. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Logic and Psychology:—1 ....9½. Electives. *Latin and French:*—1 ....3. *Mineral. and Lithol.:*—3-5....11½. *Paleontology:*—2-5 ....11½. *German:*—1 ....10½. *Political Economy:*—1-2 ....3. *History:*—1....4. *Surveying:*—1 ....8¼ to 12½. *Chemistry:*—1....2 *to* 4. *Astronomy:*—1 ....2. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Civil Engineering:—1....10½. Mineral. and Lithol.:—3-5....11½. Mechanism and Machine Drawing:—2-5 ....8¼ to 10½. Engineering Design:—1....1 to 4.	Mining Engineering, Metallurgy, Geology .... Anal. Chemistry ....2 to 4. Mechanism and Machine Drawing:—3-5....8¼ to 10½. Resist. of Materials and Engineering....10½.
	2d SEMESTER.	Electives. *Moral Phil. and Hist. of Phil.:*—1....9½. *Latin and Greek:*—1....11½. *Geology:*—1 ....11½. *German:*—1....10½. *French:*—3-5 ....11½. *Italian or Spanish:*—2-5....5. *International Law:*—1-2 ....3. *History:*—1 ....4. *Chemistry:*—1....2 *to* 4. *Astronomy:*—1 ....2. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Electives. *Moral Phil. and Hist. of Phil.:*—1....9½. *International Law:*—1-2....3. *History:*—1....4. *Geology:*—1 ....11½. *German:*—1 ....10½. *Italian or Spanish:*—2-5....5. *Chemistry:*—1....2 *to* 4. *Astronomy:*—1 ....2. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Electives. *Moral Phil. and Hist. of Phil.* ....9½. *International Law:*—1-2....3. *History:*—1....4. *German:*—1 ....10½. *Geology:*—1 ....11½. *Italian or Spanish:*—:—2-5 ....5. *Chemistry:*—1....2 *to* 4. *Astronomy:*—1....2. *English Literature:*—1-2....4. *Zoölogy:*—1....8¼. *Botany:*—1 ....8¼.	Civil Engineering:—1....10½. Machinery and Prime Movers:—2-5 8¼ to 10½. Geology:—3-5....11½. Electives. *Chemistry, Astronomy,* *Engineering Design.*	Mining Engineering....11½. Metallurgy....2 to 4. Machinery and Prime Movers:—2-5, 8¼ to 10½. Economic Geology ....11½.

CHAPEL EXERCISES AT 9 1-4 O'CLOCK.

N. B.—The first number following a topic indicates the whole or a portion of the Semester during which the study continues. The figures indicate the hour of Exercise.

*** Greek may be substituted in this course for Latin.** † For exercises in English each class is divided into sections, each section having an exercise once a week. Each student is required during the Sophomore year to write and read five Essays. **During the Junior year Rhetorical exercises are elective, but those who elect the subject are required to write and deliver five speeches.**

6. GREEK.—*Grammar.* Hadley's or Goodwin's; *the Etymology must be thoroughly mastered.*

Prose Composition.—Jones's Exercises, with special reference to the writing of Greek with the accents, and to the general principles of Syntax. Arnold's Exercises are taken as an equivalent.

Reading.—Three books of Xenophon's Anabasis. The so-called Continental sound of the vowels and diphthongs, and pronunciation according to the written accent, are preferred. In preparation, Boise's First Greek Lessons will be found valuable.

Two full years of daily recitation in Greek are essential to success.

II.—LATIN AND SCIENTIFIC COURSE.

Candidates for this course will be examined in French and in all the studies required for the Classical Course, excepting what is above required in Grecian History, in paragraph 3, and what is included in paragraph 6, GREEK. A general knowledge of all the principles of French Grammar and of French construction is required, together with some experience in the reading of easy, descriptive French. The amount of reading should be the equivalent of 75 pages in Bôcher's-Otto's French Reader. Candidates using Duffet's French Method may prepare themselves in the whole of that work (2 Parts, including all the French reading matter therein contained) and in the equivalent of 35 pages of Bôcher's Reader. Those using Fasquelle's or Otto's French Course may learn with profit the French verbs from Hennequin's Treatise on the French Verbs, and are recommended so to do.

III.—GREEK AND SCIENTIFIC COURSE.

Candidates for this course will be examined in all the studies required for the Classical Course (excepting what is above included in paragraph 5, LATIN), and in French. The requirements in French are the same as for admission to the Latin and Scientific Course.

IV.—SCIENTIFIC AND ENGINEERING COURSES.

Candidates for this course will be examined in the following studies:

1. English Language and Geography.—In both, same as in Classical Course.

2. History.—Swinton's or Freeman's or Anderson's Manual of General History, or an equivalent.

3. Mathematics.—Same as in Classical Course.

4. French.—Same requirements as the present for admission to the Latin and Scientific Course.

5. Natural Philosophy.—Cooley's "Text-book of Natural Philosophy," or Rolfe and Gillet's "Hand-book of Natural Philosophy," or an equivalent.

6. Botany.—The elements of Vegetable Anatomy and Physiology, as given in the first 27 chapters of Gray's Lessons, or the First and Second Parts of Wood's "Class-book of Botany."

7. Zoölogy.—The elements of Comparative Anatomy and Physiology as given in Cleland's "Animal Physiology," or Huxley's and Youmans's Physiology and Hygiene.

8. Geology.—The rudiments of General and Dynamical Geology, and the outlines of Historical Geology,—Dana's "Text-book" to p. 72, omitting pp. 47–62, and the chapter on Water, pp. 273–299, or

9. English Literature, Shaw's Manual of English Literature, (Backus's Edition).

In 1876 either Geology or English Literature will be accepted. But in 1877 and thereafter English Literature will be required. Geology will not be accepted in its place.

10. Geometrical Drawing.—The principles of Geometrical Drawing, Tinting and Shading, as contained in Warren's "Drafting Instruments," and Drawings of all the figures of the Third Division of the Book, and those on Plates II., III. and IV., or an equivalent. The drawings must be neatly executed with India ink, on Whatman's drawing paper, or on Bristol board. The "Medium" size drawing paper is recommended, and each sheet should be divided into four plates of equal size. After the work is completed, all the plates should be trimmed to a uniform size of about *eight* inches wide by *ten* inches long. It is advisable to secure only a small number of drawing instruments, but those should be of good quality, that they may answer for class exercises in the University. If more instruments are

needed, they can be procured here. German silver instruments are best.

Instruments and materials *required*:—One pair of plain dividers; one pair of dividers with pen and pencil point; one right line pen; a scale; a pair of triangles; a hard pencil; and a piece of India ink. These articles of good quality, need not cost over $4.00.

V.—SELECTED STUDIES.

Those who do not desire to become candidates for a Degree, may be admitted to any class for such time as they may choose, in case they pass the examinations necessary for admission to the Freshman class, and also exhibit such proficiency as will enable them to proceed advantageously in the particular studies which they propose to pursue.

Advanced scientific students who desire to pursue certain subjects as specialties, such as Chemistry, Geology, Astronomy, etc., may have the privilege of doing so, with consent of the Professor in charge of such studies.

VI.—ADVANCED STANDING.

Candidates for advanced standing will be examined in the previous studies for the course they propose to enter, and, if they come from another institution, will present certificates of honorable dismission.

VII.—THE EXAMINATION FOR ADMISSION.

An examination for admission to the Department of Literature, Science, and the Arts, will take place on Saturday and Monday, June 24th and 26th, 1875, and another, beginning on Thursday, September 21st, and continuing through the Friday and Saturday and Monday following. These examinations will begin at 9 o'clock A. M. of each day.

The candidate must be provided with credentials from his last instructor, or from the last institution with which he has been connected. These must be presented to the President at his office, before the candidate can enter upon the examination.*

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* Requests for specimen copies of examination papers are often sent to us. As our examinations for admission are chiefly oral, it is not practicable to comply with these requests.

SPECIAL NOTICE TO PREPARATORY SCHOOLS.

A Committee of the Faculty will visit, once every year, any Public High School in Michigan, on request of its School Board, and report its condition to the Faculty.

If the Faculty shall be satisfied from such report that the school is taught by competent instructors, and is furnishing a good preparation for any one or more of our regular courses, then the graduates from such *preparatory course or courses* will be admitted to the Freshman class of the University without examination, and permitted to enter on such undergraduate course or courses as the approved preparatory work contemplated.

They must present to the President within three months after their graduation, the diplomas of their School Board, certifying that they have sustained their examinations in *all* the studies prescribed for admission to one of the three courses, Classical, Scientific and Engineering, or Latin and Scientific. They will also be required to appear at once in their classes, otherwise they can be admitted only after examination.

The privilege of admission on diploma is limited to public schools in Michigan, and their School Boards must make the application annually.

COURSES DESCRIBED.

It will be observed by reference to the Synchronistic Table (opposite page 32) that in the Classical, Scientific, and Latin Scientific Courses an opportunity is offered in the Senior Year for large liberty in the choice of studies.

I.—ENGLISH LANGUAGE AND LITERATURE.

This topic includes four branches of work; first, the study of the origin, growth and laws of our language; second, the study of the art of effective expression, whether by pen or voice; third, the study of the literature of our language; fourth, regular practice in writing and speaking.

FRESHMEN.—English Language—Tancock's English Grammar; Morris's Elementary Lessons in Historical English Grammar; Earle's Philology of the English Tongue; Tragedy of Julius Cæsar, Rolfe's ed., with Abbott's Shakespearean Grammar. Lectures on Elocution, with exercises for the voice, and the delivery by each student of two original speeches.

Engineers.—Lectures, with Day's Art of Discourse.

SOPHOMORES.—English Literature—Lectures; Thomas Arnold's Manual of English Literature. Rhetoric—Lectures; Day's Art of Discourse. Exercises in English Composition once each week, with special criticism on each essay in the presence of the appropriate subsection.

JUNIORS.—English Exercises—*Elective*—Practice in debate, written and extemporaneous, as well as in criticism of argument and in the decision of argued questions. The exercises of each student are carefully criticised by the instructor in charge.

SENIORS.—English Literature of 14th and 15th Centuries—*Elective*—Direct study of specimens from Chaucer, Gower, Langland, Wyclif, Occleve and Lydgate. English Literature since the 15th Century—Direct study (results presented in written theses and in oral discussions) of Sackville's Induction; More's Utopia; Sidney's Apologie for Poetrie; Spenser's Faëry Queen, Book I.; Bacon's Essays; Shakespeare's Sonnets; Milton's Paradise Lost, and Areopagitica; Pope's Dunciad; Burke's Reflections on the French Revolution; Wordsworth's Excursion; De Quincey's Confessions of an English Opium Eater.

American Literature—Lectures.

II.—LATIN LANGUAGE AND LITERATURE.

FRESHMEN.—Cicero de Amicitia or Quintus Curtius; Latin Grammar; Livy, 21st and 22d books; Latin Prose Composition completed.

SOPHOMORES.—Horace; Juvenal; Terence or Plautus; Prosody; Roman History. Lectures on Roman Antiquities.

JUNIORS.—Quintilian; Lectures on Roman Literature.

SENIORS.—Tacitus; Pliny's Letters; Lectures on Roman History.

TEACHERS' CLASS.—Virgil. Exercises in exegesis. Latin Prose Composition.

POST-GRADUATES.—Seneca's Prose works; Lactantius.

III.—GREEK LANGUAGE AND LITERATURE.

FRESHMEN.—*First Semester*—Selections from Thucydides, Arrian, and Lucian, contained in Boise and Freeman's Selection from Greek Authors. Greek History. Syntax and Prose Writing. *Second Semester.*—Homer's Iliad, 5 books. Essays on Epic Poetry and the Homeric Age, by the class; lectures by the Professor. History of Greek Literature.

SOPHOMORES.—*First Semester*—The Philippics of Demosthenes. *Second Semester*—Theocritus. The Œdipus Tyrannus of Sophocles; Analysis of Greek Tragedies; Lectures on the Greek Drama.

JUNIORS.—Demosthenes on the Crown; Lectures on the Greek Orators; Plato's Apology.

SENIORS (*Elective*).—*First Semester*—The Prometheus of Æschylus; Lectures on the Greek Tragedy; A critical exegesis of the Agamemnon of Æschylus. Selections from Plato's Phædo.

TEACHERS' CLASS.—Selections from the Anabasis. Exercises in Greek Grammar.

Second Semester—The Clouds of Aristophanes; Lectures on the Greek Comedy. Selections from the Lyric Poets and Lectures on the same. The History of Greek Art.

TEACHERS' CLASS.—Greek Prose Composition; Exercises in Syntax.

POST-GRADUATES.—History of Classical Philology. The Greek Dialects.

The student will have opportunity to read with the instructor whatever author he pleases.

IV.—MODERN LANGUAGES AND LITERATURE.

1. GERMAN.

IN THE CLASSICAL COURSE.

SENIORS.—Whitney's Grammar and Exercises; Petermann's Literaturgeschichtliches Lesebuch; Schiller's Jungfrau von Orleans.

IN THE SCIENTIFIC AND LATIN-SCIENTIFIC COURSES.

JUNIORS.—Whitney's Grammar, Exercises, and Reader. Petermann's Lesebuch.

SENIORS.—Gœthe's Iphigenie, and Wahrheit und Dichtung. O. Brosins's Schiller und sein Verhältniss zu dem Publikum seiner Zeit. Niebuhr's Tales of Greek Heroes (for translation into German). Lectures.

IN THE ENGINEERING COURSES.

SOPHOMORES.—Whitney's Text-books.

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2. FRENCH.

IN THE CLASSICAL COURSE.

JUNIORS.—Knapp's French Grammar; The Vicar of Wakefield (for translation into French); Foster, Histoire abrégée de l'art.

SENIORS.—Taine's Philosophie de l'art en Grèce.

IN THE LATIN AND SCIENTIFIC COURSE.

FRESHMEN.—Chardenal's French Exercises; Hennequin's French Verbs; Lamartine, Graziella; French Composition; Translation into French.

SOPHOMORES.—Brachet's Nouvelle Grammaire française; Molière, Misanthrope; George Sand, Molière; Translation into French. Lectures.

IN ALL OTHER COURSES.

FRESHMEN.—Chardenal's French Exercises; Fyffe's History of Greece (for translation into French); La joie fait peur; Vinet, Esquisse d'une histoire de l'architecture classique; Further French Translation; Composition.

SOPHOMORES.—Translation of Scientific English into French; Bornier, La fille de Roland; Molière's Plays; Lectures.

3. ITALIAN AND SPANISH.

Thirty lessons in Italian or Spanish are offered in the second semester.

V.—HISTORY.

IN THE CLASSICAL COURSE.

Freshmen.—Grecian and Roman History; the authors most used are Smith and Merivale.

Sophomores.—Grecian and Roman History completed. During the first two years of the course, an effort is made to give the student, by means of lectures as well as the text-books, as clear an insight as possible into the political life and institutions of Greece and Rome, from their foundation to their decline.

Juniors.—History of Civilization in Europe; Guizot being used as a text-book. Six lectures are given on Historians and Historical Books.

IN THE SCIENTIFIC COURSE.

Freshmen.—Modern History, Thalheimer or Yonge.

Sophomores.—Mediæval History, Duruy and Hallam.

Juniors.—Civilization in Europe, Guizot.

IN THE LATIN AND SCIENTIFIC COURSE.

The same as the History in the Classical Course.

IN THE ENGINEERING COURSES.

Freshmen.—Modern History, the same as that taken in the Scientific Course.

ELECTIVE HISTORY.

Members of the Classical Course and of the Latin and Scientific Course, who desire further instruction in history, have an opportunity of electing it instead of Calculus during the second semester of the Sophomore year. To the students electing this course, daily lectures are given on the period extending from the Revival of Learning to the close of the Thirty Years' War. For the students electing the above, as well as for students of the Scientific Course, there is further opportunity of electing History as a full study during the whole of the Senior year. Those electing this Senior Course are grouped in sections of twelve or fourteen students each, for the purpose of historical investigation. At the first meeting of the Class in each semester, a series of historical questions are assigned with numerous references to historical authorities. Each of the questions occupies the attention of each section of the Class for one week. Every student is required to read before the Class, in the course of the semester, one Thesis and one Critique, the Thesis being on one of the historical questions, and the Critique being on a Thesis presented by one of the other members of the Class. Every student is further required to investigate each week the question for that week, and to come to the Class prepared to give the results of his investigation. The questions considered during the first semester are on the Constitutional History of England: those during the second are on the Constitutional History of the United States. To the students electing history during the Senior year, three courses of lectures are also given: one on the Government of Great Britain; one on the Governments of Larger Nationalities of Continental Europe; and one on the Political History of the United States. Two lectures are given each week during the whole of the Senior year.

VI.—PURE MATHEMATICS.

IN THE CLASSICAL COURSE.

FRESHMEN.—*Geometry.*—Exercises in geometrical invention, including theorems and problems, application of Algebra to Geometry, Loci, Maxima and Minima, Traversals, and an elementary knowledge of the Modern Geometry; *i. e.*, PART III. of Olney's Geometry, and *Plane Trigonometry*. *Algebra.*—Theory of Indeterminate Coefficients, Binomial Theorem and its application to the development of Functions, Theory and use of Logarithms, Indeterminate Analysis, the Elements of the Theory of Equations, Sturm's Theorem, and Horner's Method of solving Higher Equations; *i. e.*, PART III. of Olney's Algebra, or an equivalent in other authors.

SOPHOMORES.—*Trigonometry.*—Spherical. *General Geometry.*—Construction of Equations; Production of Equations of Plane Loci, Transformation of Coördinates and Properties of the Conic Sections. ELECTIVE. *Calculus.*—Differential, including differentiation of Functions of a Single Variable, McLaurin's and Taylor's Theorems with Binomial Theorems and Theory of Logarithms deduced, Maxima and Minima, Functions of a Single Variable, Radius of Curvature, and the Elementary Principles of Tracing Curves; Integral, Elementary Forms, Binomial Differential, Rectification and Quadrature of Plane Curves, and Volumes of Solids of Revolution.

IN THE LATIN AND SCIENTIFIC COURSE.

Same as in Classical Course.

IN THE SCIENTIFIC COURSE.

FRESHMEN.—*Geometry.*—The same as Classical; *Plane and Spherical Trigonometry*. *Algebra.*—Same as Classical.

SOPHOMORES.—*General Geometry and Calculus.*—Same as in Classical, including Elective.

IN THE CIVIL ENGINEERING COURSE.

FRESHMEN.—Same as Scientific.

SOPHOMORES.—Same as Scientific to the middle of the Sophomore year, and the General Geometry and Calculus extended through this year.

JUNIORS.—*General Geometry.*—Polar Coördinates, Lines, Planes and Surfaces in Space, including Surfaces of the 2d Order. *Calculus.*—Differential, including Functions of Several Variables with a fuller view of the Theory of Curves; Integral, extended so as to include Functions of two Variables and Special Processes of integrating.

IN THE MINING ENGINEERING COURSE.

Same topics as in Scientific Course, pursued in order indicated in the general table.

VII.—PHYSICS.

The study of Experimental Mechanics, Acoustics and Optics, is pursued during the first semester of the Junior year.

In the second semester the study of Analytical Mechanics (with application of the Calculus), is required of the students in Civil and Mining Engineering, and is elective with German, and will probably be elective with a course of Laboratory work in Physics, by the students of the Scientific Course.

The subjects of Heat, Electricity and Magnetism are included in the instruction given by the Professor of Chemistry.

It is expected that next year provision will be made for giving the students in the Classical and Latin-Scientific Courses, who desire to pursue as an extra study a course of Laboratory work in Physics, an opportunity for exercises in physical experimentation, and for becoming practically acquainted with the instruments and methods of physical investigation.

VIII.—ASTRONOMY.

Besides the instruction mentioned in the Table, there is a Course in Higher Astronomy, which embraces two years, and is optional. It begins with the first semester of the Senior year; and the students who wish to go through the whole course must stay one year after graduation. The lectures during the two years embrace—

1. Spherical Astronomy, and Theory of the Instruments.
2. Calculation of the Orbits of the Celestial Bodies.

3. Numerical Calculus; Theory of Interpolation; Method of the least Squares.

4. Physical Astronomy; Calculation of the Special and General Perturbations of Planets, and Perturbations of Comets.

During the whole time the student has ample opportunity to use the instruments of the Observatory, and to make astronomical calculations.

IX.—GEOLOGY AND MINERALOGY.

The elements of *Mineralogy* and *Lithology* are imparted in the first semester, three days in the week, by means of lectures, recitations, and practical studies in the class-room; Text-book, Dana's "Manual of Mineralogy."

The elements of *Dynamical* and *Historical Geology* are presented in a series of lectures through the second semester, illustrated by hand specimens. Text-book, Dana's Text-book of Geology. The lectures on Mineralogy and Geology are illustrated by magic-lantern (sciopticon) slides.

For higher courses in these studies, see "The Polytechnic School."

X.—ZOOLOGY AND BOTANY.

The elements of structural, physiological and systematic *Botany* are imparted in a course of recitations and practical studies, with specimens in hand, with the Classical and Latin and Scientific Freshmen.

The Scientific Freshmen and those Civil Engineering students who elect Botany, study the classification of plants by means of the analysis and careful description of fresh specimens.

The botanical text-books are Gray's Series.

The members of the Scientific and of the Latin and Scientific Sections of the Junior Class can elect a course in *Biology*. This course continues through three-fifths of the first semester. It consists of the study of as many typical forms of animals and plants as can be considered in the time allotted. The specimens, miscroscopes and other instruments are provided by the University. The student is expected to present correct drawings of the objects examined. One series of these drawings made on a uniform plan is deposited in the Microscopical Laboratory. The text-book employed in this work is McGinley's "Biology."

In the second semester of the Junior year, the members of the Scientific Section are required to take a course in *Zoölogy* continuing through three-fifths of the semester. It is proposed to make this a course in Embryology. The development of the chick in the hen's egg will be followed in detail, microscopically and otherwise. The text-book for this course will be Foster and Balfour's "Elements of Embryology," Part I.

The two preceding courses require work on the part of the student in the Microscopical Laboratory, for details concerning which see "The Polytechnic School."

The elective course of the Senior year is a course in Paleontology, as a preparation for Geology. Text-books, Nicholson's Series.

For special courses in Zoölogy and Botany see "The Polytechnic School."

XI.—LOGIC AND INTELLECTUAL AND MORAL PHILOSOPHY.

Philosophy is taught by text-books and lectures: during the first semester, Logic and Psychology; and during the second semester, Moral Philosophy and the History of Philosophy, and the Evidences of Christianity.

XII.—POLITICAL ECONOMY AND INTERNATIONAL LAW.

The President gives instruction to Seniors during the first semester in Political Economy, and during the second semester in International Law.

XIII.—ANATOMY, PHYSIOLOGY, AND HYGIENE.

A Course of Lectures in Anatomy, Physiology, and Hygiene is given to the Junior Class by the Professor of Anatomy and Physiology.

XIV.—CHEMISTRY AND CHEMICAL MINERALOGY.

The instruction in Chemistry is embraced in a course of lectures to the Medical Class during the first semester, and to the Junior Class during the second, on Elementary Chemistry. The Institution being well supplied with apparatus, these lectures are fully illustrated by experiments, and attended by thorough reviews and examinations. On the basis of chemical classification of minerals, the science of Minerals will be treated in connection with that of Chemistry.

Students most advanced in the science will be admitted into the Analytical Laboratory, and furnished with all the necessary material and apparatus, and will conduct with their own hands, under the direction and supervision of the Professor, a systematic course of Qualitative Analysis. The object of this course will be twofold: *First*, to make the student familiar, by actual practice, with the principles and laws of science, as well as the properties of the various elements and compounds, and their relation to each other; *Second*, to exercise the student in chemical manipulations, and to enable him to perform analytical investigations.

After a satisfactory completion of Qualitative Analysis, the student may enter upon any of the following courses:

Quantitative Analysis,
Assaying—for Metals,
Toxicological Examinations,
Chemical Mineralogy,
Volumetric Analysis,
Pharmaceutical Preparations,
Ultimate Organic Analysis.

Those who are competent may receive aid in Original Investigations. (See Mining Engineering and Pharmacy under "The Polytechnic School.")

TEXT-BOOKS AND WORKS OF REFERENCE.

Miller's Chemistry,
Bloxam's Chemistry,
Douglas and Prescott's Analysis,
Plattner on the Blow-Pipe,
Brush's Manual of Blow-Pipe Analysis.
Storer's Solubilities,
Fresenius's and Rose's Analysis,
Wittstein's Pharm.Chemistry,
Dana's Mineralogy,
Watt's Dictionary of Chemistry,
Cavendish Publications,
Knapp's Chemical Technology.

XV.—ENGINEERING.

Instruction in the several subjects pertaining to Civil and Mining Engineering is given by the use of text-books, lectures, reading in the general library, and daily recitations or exercises. The University possesses a good collection of Surveying and Engineering instruments, and ample opportunity is afforded the student to become familiar with their use. For ample details of these courses see "The Polytechnic School."

XVI.—DESCRIPTIVE GEOMETRY AND DRAWING.

Thorough instruction is given in Plane Projection Drawing, Isometric, Descriptive Geometry and its applications to Carpentry and Stone Cutting, Shades and Shadows, Linear Perspective, Topographical Free Hand and Machine Drawing. This course can also be seen by referring to "The Polytechnic School."

TEACHERS' DIPLOMAS.

Any member of the Senior class, who pursues courses of study with reference to preparation for teaching, and who by special examinations shows such marked proficiency as qualifies him to give instruction, may receive a Special Diploma signed by the President and the Professors who have charge of the studies he has taken with this object in view. Classes are organized to meet the wants of those who desire to fit themselves for the work of teaching.

A special examination in the ancient and modern languages and mathematics, for the teachers' diploma, will be held the week before the spring vacation. This diploma is designed to be the certificate of qualification for teaching, and is the only form of recommendation which will be given by the Professors in charge of these studies.

STUDIES, ATTENDANCE, AND DISCIPLINE.

No student is expected to pursue more or less than three studies at one time, without special permission of the Faculty.

No student can drop any course or study until he shall have attended the regular examination in the same.

In order to rank in the Calendar in any particular class, a student must, at the time of the publication of the Calendar, have completed (leaving no deficiencies or conditions) the work of that class up to the beginning of the current academic year. Otherwise his name will appear in the roll of the class next below.

The Rules of the University require that every student shall be in his place, at all stated exercises, from the beginning to the close of his connection with the University.

Such delinquencies as tardiness, absences, deficiencies, offenses against good order, in the several departments of instruction, are ordinarily dealt with by the Professor in charge of the department in which they occur. Flagrant cases are reported to the Faculty for adjudication.

Students who are not in their places at the opening of the semester must present written excuses from their parents or guardians for the delay.

Students are not allowed to absent themselves from town without permission from the President.

The State of Michigan extends the privileges of the University, without charge for tuition, to all persons of either sex, who are qalified for admission. Thus it does not receive patronage, but is itself the patron of those who seek its privileges and honors. It cannot, however, be the patron of idleness or dissipation. Its crowded classes have no room except for such as assiduously pursue the studies of their choice, and are willing to be governed in their conduct by the rules of propriety.

Students are suspended or dismissed, whenever, in the opinion of the Faculty, they are pursuing a course of conduct seriously detrimental to themselves or the University.

The following are extracts from the by-laws of the Regents:

"Concerted absence from any appointed duty by a class or any number of students together, will be regarded as a great violation of good order, and will be followed by suspension or dismission, at the discretion of the Faculty."

"Whenever any Faculty is satisfied that a student is not fulfilling, or likely to fulfill, the purposes of his residence at the University, or is for any cause an unfit member thereof, the President shall notify his parents or guardians, that they may have an opportunity to withdraw him, and if not withdrawn within a reasonable time, he shall be dismissed."

THE FACULTY

OF THE DEPARTMENT OF

LITERATURE, SCIENCE, AND THE ARTS.

JAMES B. ANGELL, LL. D.,
PRESIDENT.

REV. GEO. P. WILLIAMS, LL. D.,
SILAS H. DOUGLAS, M. A., M. D.,
CORYDON L. FORD, M. A., M. D.,
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REV. BENJAMIN F. COCKER. D. D., LL. D.,
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GEORGE S. MORRIS, M. A.,
CHARLES E. GREENE, M. A., C. E.,
MOSES COIT TYLER, LL. D.,
WILLIAM H. PETTEE, M. A.,
JOHN W. LANGLEY, B. S.,
EDWARD L. WALTER, M. A.,
ALBERT H. PATTENGILL, M. A.,
JOSEPH B. DAVIS, C. E.,
MARK W. HARRINGTON, M. A.,
HARRY B. HUTCHINS, PH. D.,
WOOSTER W. BEMAN, B. A.,
PRESTON B. ROSE, M. A., M. D.,
ELISHA JONES, M. A.,
P. R. B. DEPONT, A. B., B. S.,
CHARLES S. DENISON, C. E., M. S.,
ALFRED HENNEQUIN, M. A.,
CHARLES N. JONES, B. A.,
OTIS C. JOHNSON, B. A.,
SAMUEL T. DOUGLAS, PH. B., PH. C.,
JOHN J. MAPEL, M. A.,
ABRAM V. E. YOUNG, PH. B., PH. C.,
VICTOR C. VAUGHN, M. S.

STUDENTS.

RESIDENT GRADUATES OF THE UNIVERSITY.

Name.		Residence.
Salem T. Chapin, B.S.,	*University of Michigan,*	Grand Rapids.
Nathan P. Collins, B.A.,	*Olivet College, Mich.,*	Union City.
Frank P. Davis, M.S.,	*Ag. College, Mich.,*	Ann Arbor.
Caroline I. Hubbard, B.S.,	*University of Michigan,*	Kalamazoo.
John D. Hartley, M.D.,	*University of Michigan,*	Ann Arbor.
Albert S. Hovey, B.A.,	*Willoughby College, Ohio,*	Mentor, Ohio.
Absalom W. Jones, B.A.,	*Otterbein Univ., Ohio,*	Flat Rock, Ill.
Ant. D. Marshall, LL.B.,	*University of Michigan,*	Brainbridge.
Frank W. H. Massey, PH.C.	*University of Michigan,*	Brownville, N. Y.
Robert J. Peare, M.D.,	*University of Michigan,*	Ann Arbor.
William H. Smith, M.A.,	*Kalamazoo College,*	Ann Arbor.
Vol. M. Spaulding, B.A.,	*University of Michigan,*	Ann Arbor.
John Fletcher Starr, B.S.,	*Oberlin College, Ohio,*	Bryan, Ohio.
Arthur R. Tripp, LL.B.,	*University of Michigan,*	Commerce.
Victor C. Vaughan, M.S.,	*University of Missouri,*	Huntsville, Mo.

SENIORS.

Name.	Course.	Residence.
Henry Wilkins Alexander,	Cl.	*Greenville, Ill.*
Dewitt Clinton Allen,	Eng.	*Cattaraugus, N. Y.*
Lucy Caroline Andrews,	Cl.	*Ann Arbor.*
Edmund Drinan Barry,	Cl.	*Ann Arbor.*
Charles A. Blair,	Cl.	*Jackson.*

NOTE.—By a new rule, in order to rank in any particular class, a student must have completed (leaving no deficiencies or conditions) the work of that class up to the beginning of the current academic year. Therefore, in this Calendar the names of some students appear in the class below that with which they will probably graduate.

We print the names of those students only who have been in actual attendance during the year.

ABBREVIATIONS.—*Cl.*—Classical Course. *L.*—Latin and Scientific Course. *Sc.*—Scientific Course. *Eng.*—Civil Engineering. *M. Eng.*—Mining Engineering.

Philip Riley Boone,	Cl.	*Middletown, Del.*
Clarence Shepard Brown,	Cl.	*Milwaukee, Wis.*
William Wadsworth Burt,	Cl.	*Ann Arbor.*
Ben Taylor Cable,	Sc.	*Rock Island, Ill.*
James Oscar Caldwell,	Eng.	*South Salem, Ohio.*
Burton Byron Campbell,	Sc.	*Monroe.*
Henry Munroe Campbell,	L.	*Detroit.*
Charles Conner,	Sc.	*Utica.*
Albert Melvin Cooper,	Cl.	*Ann Arbor.*
Archibald Lamont Daniels,	Cl.	*Kendallville, Ind.*
Anson Peter De Wolf,	Cl.	*Prairieville.*
Lewis Cass Donaldson,	Eng.	*Ann Arbor.*
William Henry Dopp,	Cl.	*Buffalo, N. Y.*
William Pitt Durfee,	Cl.	*Plymouth.*
Bessie Eaglesfield,	Cl.	*Terre Haute, Ind.*
Annie Warden Ekin,	L.	*Topeka, Kansas.*
Helen Marie Farrand,	L.	*Port Huron.*
Frank Lawrence Felch,	Cl.	*Ann Arbor.*
John Charles Floyd,	Sc.	*Litchfield.*
Vine Colby Foster,	L.	*Ann Arbor.*
Alice Elvira Freeman,	Cl.	*Otego, N. Y.*
Edward Alonzo Gott,	L.	*Ann Arbor.*
Fred Keays Gustin,	Cl.	*Bay City.*
Dennie J. Higley,	Cl.	*Dexter.*
James Keeler Ilsley,	Cl.	*Milwaukee, Wis.*
Gertrude Helen Mason,	L.	*Berlin, Wis.*
James Henry McDonald,	Cl.	*Ann Arbor.*
Josiah Benjamin Newton,	Sc.	*Pontiac.*
Charles Walter Howard Potter,	Cl.	*Ashland, Ohio.*
Edward Hitchcock Ranney,	Cl.	*Kalamazoo.*
Louisa Maria Reed,	Sc.	*Ann Arbor.*
John Henry Reynolds,	Cl.	*Paterson, N. J.*
Joseph Ripley,	Eng.	*Pontiac.*
Ben Safley,	Cl.	*Council Bluffs, Ia.*
Lucy Maynard Salmon,	Cl.	*Fulton, N. Y.*
John Dana Sanders,	Eng.	*Livermore, Me.*
John Martin Schaeberle,	Eng.	*Ann Arbor.*
Frank D. Shaver,	Cl.	*Ripley, N. Y.*
Jonathan C. Shepard,	Eng.	*Marshalltown, Ia.*
Howard Burnham Smith,	Cl.	*Omaha, Neb.*
Louis Crandall Stanley,	Cl.	*Detroit.*
Joseph Hall Steere,	Cl.	*Adrian.*
Emma Sophia Stockbridge,	Cl.	*Fort Wayne, Ind.*
Lester Herbert Strawn,	Eng.	*Ottawa, Ill.*
Edward Cassius Swift,	L.	*Ottawa, Ill.*

Charles Lee Van Pelt,	Cl.	*Williamsville, N. Y.*
Charles B. Van Slyke,	Cl.	*Ann Arbor.*
Orlaf Varlo,	Cl.	*Decorah, Iowa.*
Albert Jacob Volland,	Cl.	*Ann Arbor.*
Bryant Walker,	Cl.	*Detroit.*
Willis Shotwell Walker,	Cl.	*Findlay, Ohio.*
William Jay Warner,	Sc.	*Geneva, Wis.*
James Anderson Watterson,	Sc.	*Mercer's Bot., W. Va.*
Mary Alice Williams,	Cl.	*Weedsport, N. Y.*
Robert Justice Young,	Cl.	*Akron, Ohio.*

JUNIORS.

Names.	Course.	Residence.
Osmer Henry Aikine,	Eng.	*Jackson.*
Joseph Sutton Ayres,	Cl.	*Romeo.*
George Snell Baker,	Cl.	*Flint.*
George Barnes,	Cl.	*Ithaca.*
Ida M. Bellis,	Sc.	*Berlin, Wis.*
Alfred Allen Bennett,	Sc.	*Milford, N. H.*
George Stephen Bishop,	Cl.	*Hillsdale.*
Albert Nelson Bliss,	Cl.	*East Calais, Vt.*
Charles Ankeney Bosworth,	Cl.	*Wilmington, O.*
George Kenneth Brown,	L.	*East Saginaw.*
George Preston Brown,	Cl.	*Ann Arbor.*
George Alonzo Cary,	Cl.	*Wayne.*
William Carpenter,	L.	*Farwell.*
Herbert Elwood Cady,	Cl.	*Ann Arbor.*
Branch H. Colby,	Eng.	*Ann Arbor.*
Lemuel Watson Clark,	Sc.	*Centerville.*
Clara M. Colman,	Cl.	*Ann Arbor.*
George Cary Comstock,	L.	*Ann Arbor.*
Percy Tyler Cook,	L.	*Brooklyn.*
John Samuel Crombie,	Cl.	*Pontiac.*
Edward Donovan,	Sc.	*Ann Arbor.*
Frank Clark Ferguson,	Cl.	*Buffalo, N. Y.*
William Barton Ferris,	Sc.	*Buffalo, N. Y.*
Joseph Henry Fisk,	Cl.	*Detroit.*
Ferris Smith Fitch, Jr.,	Cl.	*Fitchburg.*
Fred Lee Forman,	L.	*Ann Arbor.*
Carlton Cassius Frederick,	Sc.	*Buffalo, N. Y.*
Sarah George,	L.	*Jackson.*
Edward Ashley Gilbert,	Cl.	*Grand Rapids.*

John B. Glasgow,	Cl.	*Jackson.*
Lulu Goodrich,	L.	*Ann Arbor.*
William John Gray,	Cl.	*Detroit.*
Edward Holmes Guyer,	Cl.	*Rock Island, Ill.*
Abram Sager Hall,	L.	*Saline.*
Marie Louise Hall,	L.	*Ann Arbor.*
Henry Sheldon Harris,	L.	*Ypsilanti.*
Edward Anderson Halsey,	Cl.	*Chicago, Ill.*
Albert William Hard,	L.	*Ottawa, Ill.*
Harriet Amanda Holman,	Cl.	*Flint.*
Lawrence Cameron Hull,	Cl.	*Hamburg.*
Frank Henry Kimball,	Sc.	*Rockford, Ill.*
Ortive E. Latham,	L.	*Monroeville, Ohio.*
Milo Lewis,	L.	*Greenville.*
William Hurley Lightner,	Cl.	*Lock Haven, Pa.*
Charles Emmet Lowrey,	Cl.	*Hackettstown, N. J.*
Charles Alfred Marshall,	Eng.	*Wilmington, Del.*
Mary Olive Marston,	Cl.	*Eau Claire, Wis.*
William McCarroll,	Cl.	*Pontiac.*
Ann Elizabeth McDonald,	Cl.	*Ann Arbor.*
Henry Clay McDougall,	Cl.	*Ypsilanti.*
James Hoyt McFarlan,	Sc.	*Linden.*
Joseph Rogers McLaughlin,	Sc.	*Birmingham.*
William James Miller,	Cl.	*Canton, Ohio.*
George Hart Miner,	M. Eng.	*Ann Arbor.*
George Nathan Orcutt,	Cl.	*Hornellsville, N. Y.*
Milo Milton Potter,	Sc.	*Detroit.*
Emma Margaret Pugsley,	L.	*Paw Paw.*
Willis Reed Roberts,	L.	*Norristown, Pa.*
William Abel Satterlee,	L.	*Birmingham.*
Herbert Miner Slauson,	L.	*Fort Dodge, Iowa.*
Ernest Franklin Smith,	L.	*Chicago, Ill.*
Edward Johnson Snover,	Eng.	*Romeo.*
Fred Kimball Stearns,	L.	*Detroit.*
Edward Augustus Stevens,	Cl.	*Peoria, Ill.*
Margaret Stewart,	Cl.	*Ann Arbor.*
Verner Jerome Tefft,	Cl.	*Mason.*
S. VanRensselaer Trowbridge,	L.	*Lansing.*
Alonzo J. Tullock,	Eng.	*Rockford, Ill.*
James Edgar Turtle,	Eng.	*Cheshire, Mass.*
Thomas Rawlins Wilcoxson,	Cl.	*Athens, Ill.*
Frank French Williams,	Cl.	*Buffalo, N. Y.*
Affia Jennie Wilson,	Cl.	*Lapeer.*
Melancthon Lloyd Woolsey,	L.	*Ann Arbor.*

SOPHOMORES.

Name.	Course.	Residence.
Daniel Ayers Allen,	L.	*Ann Arbor.*
Marion Benjamin Allen,	L.	*Geneva.*
George Franklin Allmendinger,	Eng.	*Ann Arbor.*
Alexis Caswell Angell,	Cl.	*Ann Arbor.*
Clarence Oliver Arey,	Eng.	*Whitewater, Wis.*
Loraine Ashman,	Eng.	*Three Springs, Pa.*
Walter Wheaton Augur,	Cl.	*New Orleans, La.*
Carrie J. Barker,	L.	*Flint.*
Minnie Bary,	Cl.	*Detroit.*
Octavia Williams Bates,	Cl.	*Detroit.*
Charles Emerson Beecher,	Sc.	*Warren, Pa.*
Fred Leroy Bliss,	Cl.	*Jackson.*
Michael Henry Brennan,	L.	*Ann Arbor.*
Granville Williams Browning,	Sc.	*St. Paul, Minn.*
Dennis James Casey,	Eng.	*Wilmington, Del.*
Eva Chandler,	Cl.	*Pontiac.*
Annie Duxbury Clark,	L.	*Ann Arbor.*
Carlos Bingham Cochrane,	Cl.	*Ann Arbor.*
J. Rose Colby,	Cl.	*Ann Arbor.*
Kate Ellis Coman,	L.	*Hanover, Ohio.*
Charles Malcolm Cooley,	L.	*Decorah, Iowa.*
Samuel Crocker,	Sc.	*Mt. Clemens.*
Michael Buchanan Danaher,	Cl.	*Ludington.*
Charles M. Daugherty,	Cl.	*Xenia, Ohio.*
Edward Sweatt Davis,	Eng.	*Waxahachie, Texas.*
David Noble De Tarr,	Cl.	*Boone, Iowa.*
James Dick Du Shane,	Eng.	*Connellsville, Pa.*
Thomas J. Eaman,	L.	*Ann Arbor.*
John Herbert Edwards,	L.	*Dixon, Ill.*
Emma Marie Farrand,	L.	*Ann Arbor.*
Ogden Winner Ferdon,	L.	*Ann Arbor.*
George Lee Fisher,	Eng.	*Pontiac.*
Randall Palmer Wade Fleming,	Cl.	*Mason.*
George Forris Foster,	Cl.	*Grand Rapids.*
Charles Edwin Garner,	L.	*Ann Arbor.*
Franklin Garrison,	Cl.	*West Nassau, N. Y.*
Clarence Griggs,	Cl.	*Ottawa, Ill.*
John E. Hanson,	Sc.	*Ann Arbor.*

Paul Henry Hanus,	Sc.	*Mineral Point, Wis.*
George Hatfield Harrower,	Cl.	*Albany, N. Y.*
Watson Dexter Hinckley,	L.	*Fredonia, N. Y.*
Ellen Clara Hogeboom,	Sc.	*Kalamazoo.*
Mary H. Hubbard,	L.	*Kalamazoo.*
Lou Hughes,	L.	*Decorah, Iowa.*
Walter Selden Jenkins,	Cl.	*Fredonia, N. Y.*
William Lee Jenks,	Cl.	*St. Clair.*
John Butler Johnson,	Eng.	*Kokomo, Ind.*
Timothy Josenhans,	Eng.	*York.*
Henry Wick Judd,	M. Eng.	*Flint.*
John Rufus King,	Cl.	*Grand Rapids.*
Henrietta Theresa Kirk,	Sc.	*Rockford, Ill.*
George Wells Knight,	Cl.	*Ann Arbor.*
Hein Lankheet,	Sc.	*Overisel.*
Frank Voorhees Luse,	M. Eng.	*Louisville, Ky.*
Eugene George Mann,	M. Eng.	*Ann Arbor.*
Howell C. Moore,	Cl.	*San Jose, Cal.*
William V. Moore,	Cl.	*Detroit.*
Seymour Tenny Morse,	Eng.	*Highland.*
Horace Greeley Myers,	Sc.	*Varna, Ill.*
Harry Pierce Myrick,	Cl.	*Ann Arbor.*
Thomas Henry Noble,	M. Eng.	*Elk Rapids.*
Albert James Norton,	L.	*Coldwater.*
William Augustus Otis,	Eng.	*Ann Arbor.*
Charles Fernando Owen,	Cl.	*Dearborn.*
Annie Smith Peck,	Cl.	*Providence, R. I.*
Charles Kendal Perrine,	Cl.	*Jackson.*
James Hervey Raymond,	Cl.	*Austin, Texas.*
Jay Junius Read,	Sc.	*Blackberry, Ill.*
James Sanderson,	Eng.	*Detroit.*
Orr Schurtz,	Cl.	*Constantine.*
James Truman Shaw,	Cl.	*Detroit.*
Ossian Cole Simonds,	Eng.	*Grand Rapids.*
Frank Livingston Sizer,	Eng.	*Ottawa, Ill.*
Lyndon Sanford Smith,	Cl.	*Golden, Colorado.*
Spencer Ramsey Smith,	Cl.	*Fort Wayne, Ind.*
Hiram Everett Terry,	Eng.	*Avon.*
Dora Sophia Titus,	Cl.	*Coldwater.*
Cora Ilione Townsend,	Cl.	*Coldwater.*
Stewart Douglass Walling,	Cl.	*Circleville, Ohio.*
Horace Bailey Wamsley,	Cl.	*Huntertown, Ind.*
Louis K. Webb,	Sc.	*Kalamazoo.*
Elmer Randolph Webster,	Cl.	*White Lake.*

Andrew Wenzell,	Eng.	*Detroit.*
Andrew Whitehead,	Cl.	*Coldwater.*
Sydney Buckminster Wight,	L.	*Detroit.*
Ross Wilkins,	L.	*Detroit.*
Theodore John Wrampelmeier,	Cl.	*Louisville, Ky.*

FRESHMEN.

Name.	Course.	Residence.
Edward Playfair Anderson,	Cl.	*Ottawa, Kansas.*
Henry Winfield Ashley,	Cl.	*Toledo, Ohio.*
William Livingston Axford,	L.	*Holly.*
John White Baker,	Cl.	*Kalamazoo.*
Otis Baker,	Cl.	*Kalamazoo.*
Orlando Fleming Barnes,	Cl.	*Lansing.*
Theodore Melzo Bates,	Eng.	*E. Cleveland, Ohio.*
Charles Spenser Beadle,	Sc.	*Augusta.*
Joseph Allan Beaumont,	Eng.	*Peru, Ind.*
Fred Somers Bell,	L.	*Fort Dodge, Iowa.*
Cora Agnes Benneson,	Cl.	*Quincy, Ill.*
James Stark Bishop,	L.	*Hillsdale.*
John Harris Black,	L.	*Chicago, Ill.*
Mary Lavina Blood,	Cl.	*Waltham, Mass.*
Thomas Bertrand Bronson,	Cl.	*Ann Arbor.*
Hubert William Brown,	Cl.	*Ann Arbor.*
James Padelford Brown,	L.	*Milwaukee, Wis.*
Minnie Sandford Brown,	L.	*Ann Arbor.*
Will Foster Bryan,	Cl.	*Lafayette, Ind.*
William Henry Butts,	Cl.	*Ann Arbor.*
John Knox Campbell,	Cl.	*Ypsilanti.*
George Noble Carman,	Cl.	*Fenton.*
Richard Turner Chandlee,	Sc.	*Still Pond, Md.*
John Chase,	Cl.	*Ann Arbor.*
Edmund Adolph Christian,	Cl.	*Wyandotte.*
Frank Ephraim Clark,	Cl.	*Chelsea.*
Harry C. Clements,	M. Eng.	*Ann Arbor.*
Frantz Hunt Coe,	Cl.	*Ann Arbor.*
Webster Cook,	Cl.	*York.*
Ransom Cooper,	L.	*Caro.*
Emma Adelia Crouch,	L.	*Erie, Pa.*
Llewellyn Howell Davis,	Cl.	*Fenton.*
Richard Gay DePuy,	Cl.	*Ann Arbor.*

Laura Donnan,	Cl.	*Indianapolis, Ind.*
John William Dorst,	Eng.	*New Albany, Ind.*
Frank M. Dunlop,	Sc.	*Detroit.*
Thomas Randolph Edwards,	L.	*Ann Arbor.*
Fannie Clinton Farrand,	Cl.	*Ann Arbor.*
Fred Charles Fay,	Cl.	*Fenton.*
Fred Knowlton Fernald,	L.	*Adrian.*
John Napoleon Flynn,	L.	*Wyandotte.*
James T. Francis,	Eng.	*Camp Point, Ill.*
Rathbun Fuller,	L.	*Toledo, Ohio.*
Cornelius VanCleve Ganson,	Eng.	*Ypsilanti.*
Charles Mills Gayley,	Cl.	*Ann Arbor.*
Marion Sara Gerls,	L.	*Pontiac.*
William Wirt Gifford,	Cl.	*Leslie.*
Georgie A. Goodrich,	Cl.	*Ann Arbor.*
Isaac Channing Goff,	Eng.	*Cleveland, Ohio.*
Thomas C. Green,	L.	*Troy, New York.*
William Albert Greeson,	Cl.	*Alto, Ind.*
Frank Buckingham Gregory,	Cl.	*Farmington, Ill.*
William V. Grove,	Sc.	*Williamsville, N. Y.*
Leroy Halsey,	Cl.	*Chicago, Ill.*
Frank Dwight Haskell,	Cl.	*Ann Arbor.*
Clara Bell Hawley,	Sc.	*Mason.*
Charles Sumner Henning,	Eng.	*Plano, Ill.*
Minnie Alice Hewitt,	L.	*Marshall.*
Cicero Demerit Hill,	Eng.	*Milwaukee, Wis.*
Marcus Finly Hitch,	Cl.	*Barry, Ill.*
George Horton,	Cl.	*Ann Arbor.*
Edward King Hubbard,	Cl.	*Detroit.*
Jerry Whipple Jenks,	Eng.	*Rock Falls.*
William Claflin Johnson,	L.	*Detroit.*
Fred Parker Jordan,	Cl.	*Battle Creek.*
Brayton Daniel King,	Eng.	*Ann Arbor.*
Frances Kusel,	Cl.	*Milwaukee, Wis.*
Maya V. Lee,	L.	*Lancaster, N. Y.*
Lorenzo John Locy,	Sc.	*Flint.*
George Barclay McCallum,	Sc.	*Pontiac.*
Newton McMillan,	Cl.	*Ann Arbor.*
Frank Day Mead,	Cl.	*Ann Arbor.*
J. Steward Miller,	Cl.	*Fenton.*
Jesse Fonda Millspaugh,	Cl.	*Battle Creek.*
Charles Sumner Mitchell,	L.	*St. Cloud, Minn.*
H. Throop Morley,	M. Eng.	*Marine City.*
William Bruce Morris,	Sc.	*Detroit.*
James Collins Munson,	Eng.	*Connellsville, Pa.*

William Herbert Murphy,	Cl.	*Detroit.*
William Nash,	M. Eng.	*Ottawa, Ill.*
Mark Norris,	L.	*Grand Rapids.*
Wilmot Smith Pennington,	Cl.	*Mason.*
Albert Samuel Pettit,	Cl.	*Ann Arbor.*
James Elijah Pilcher,	Cl.	*Detroit.*
Fred Polhemus,	Eng.	*Ann Arbor.*
Cyrus Augustus Pomeroy,	Cl.	*Ann Arbor.*
Irving K. Pond,	Eng.	*Ann Arbor.*
Alice Porter,	L.	*Ann Arbor.*
Henry Camp Post,	M. Eng.	*Grand Rapids.*
Daniel Edward Prescott,	Cl.	*Manchester, Iowa.*
John Charles Quintus,	M. Eng.	*Grand Rapids.*
Richard Taylor Robinson,	L.	*Kenosha, Wis.*
Bruce M. Rowley,	Eng.	*Romeo.*
John Ross Russel,	Cl.	*Detroit.*
Albert William Ryan,	Cl.	*Mt. Clemens.*
Henry Chase Safford,	Cl.	*Coldwater.*
Lyman Balcom Sailor,	Cl.	*Allegan.*
Frank Satterlee,	Eng.	*Birmingham.*
Osman Cooley Seelye,	Cl.	*Armada.*
Meritt Sherman,	Cl.	*Coldwater.*
Aura Smith, Jr.,	Cl.	*Ann Arbor.*
Charlotte Maria Smith,	Sc.	*Pontiac.*
Daniel Remsen Smith,	L.	*Ann Arbor.*
Kenneth Russell Smoot,	Cl.	*Ann Arbor.*
John Bernard Stoutemeyer,	Cl.	*Bloomington, Ill.*
Frank Homer Terry,	Sc.	*Rochester, Ind.*
Nellie Truesdel,	Cl.	*Whitmore Lake.*
J. Edward Turner,	Cl.	*Fenton.*
John Hubbard Tweedy, Jr.,	Cl.	*Milwaukee, Wis.*
Evert Van Pelt,	Eng.	*Buffalo, N. Y.*
Charles Gilbert Van Wert,	L.	*Norvell.*
Eli Warstler,	Cl.	*St. Johns.*
James Wallace Weir,	L.	*Sparta, Ill.*
Enoch Clark White,	Cl.	*Lapeer.*
Lucien James Whitney,	M. Eng.	*Bay City.*
E. Fred Wood,	Eng.	*Ann Arbor.*
Eloise W. Wood,	L.	*Springfield, Mass.*
Arthur Leland Worden,	Cl.	*Ann Arbor.*
George Deming Wright,	Cl.	*Fenton.*

STUDENTS IN SELECTED STUDIES.

Name.	Residence.
Samuel Chester Andrews,	*Ann Arbor.*
Edward James Bird,	*Bay View, Wis.*
Lorenzo Frederick Bird,	*Atchison, Ks.*
Willis G. Campbell,	*Ann Arbor.*
George Clithero,	*Portage City, Wis.*
Fannie Cary Cooley,	*Ann Arbor.*
Mary Campbell Douglas,	*Grosse Isle.*
Louis Hyde Evans,	*Chicago, Ill.*
Charles Nathan B. Hall,	*Ann Arbor.*
Henry Town Kent,	*Toledo, Ohio.*
Fernando Harvey Lungren,	*Toledo, Ohio.*
William Gray Lapham,	*Northville.*
Erastus Fletcher Mearkle,	*Clearville, Pa.*
Ellen Cornelia Merriam,	*Rutland, Vermont.*
Albert Chesterfield Pearson,	*Ferrysburg.*
David Adolphus Sawdey,	*Albion, Penn.*
Masakazuh Stehachi Toyama,	*Shids-oka, Japan.*
J. George Van Winkle,	*Eaton Rapids.*
Louis Kossuth Vaughan,	*Glasgow, Missouri.*

THE POLYTECHNIC SCHOOL.

THE University has for years given advanced instruction in the mathematical, physical and natural sciences, and thorough courses in the practical application of these sciences to the arts. We have now given to the different branches of such work a closer grouping, a more compact organization, and an ampler development, and have recognized by name what we have already had in fact, The Polytechnic School. It forms a portion of the Department of Literature, Science and the Arts.

The work is arranged with reference to the wants of two classes of students:

First. Those pursuing the study of Civil or Mining Engineering, or the study of Pharmacy, (which includes an extended course in Analytical Chemistry) with the view of graduating.

Secondly. Graduates of colleges and other persons qualified for advanced or special study of Mineralogy, Geology, Zoölogy, Botany, Civil or Mining Engineering, Physics, Analytical and Applied Chemistry, Pharmacy or Metallurgy.

In the Museum of Scientific Collections with its specimens, in the spacious and well appointed Chemical and Mineralogical Laboratories, in the Engineering Instruments and Models, and in the apparatus of the several departments of science, large facilities for illustrative teaching and study are furnished.

The general scope of the work and of the advantages offered for it is indicated in the descriptions which follow:

I. CIVIL ENGINEERING.

The University aims, by the course of study pursued in the department of Civil Engineering, to lay a foundation of sound theory, sufficiently broad and deep, to enable its graduates to enter understandingly on the further investigation of the several specialties of the profession, and, at the same time, to impart such a knowledge of the usual practice of an office, and of an engineering field party, as shall make its students useful in any position to which they may be called. The adaptation of theory to practice can be thoroughly learned only by the training of actual experience; whatever experience can be gained in a college course, under the guidance of those who have had this training, the University encourages its students to acquire.

A successful completion of the *full course* is necessary to entitle a student to a degree in Civil Engineering; but select students, not candidates for a degree, may pursue any such studies (three in number) as they may prefer, provided they are found prepared to join the classes in those studies; and they will be expected to attend all the lectures, recitations and examinations with the regular students.

Graduates of the Classical, Scientific, and Latin Scientific courses, and of other colleges whose courses of instruction are equivalent to ours, are admitted to the degree of Civil Engineer after attendance on, and a satisfactory examination in, the technical subjects alone of this course as set forth in the schedule on the following pages, in addition to the Mathematics and Analytical Mechanics of the Junior year. These studies can be completed in two years.

Each candidate for graduation must also submit a Thesis upon some approved subject, accompanied by the proper drawings, and must be prepared to pass an examination on the same before he is recommended for a degree.

Every student in Surveying is afforded abundant opportunity of becoming familiar with the excellent assortment of instruments owned by the University, in number sufficient to equip well its classes, and embracing all of the usual assortments for actual work.

Field practice is a portion of the regular course. The classes in surveying are drilled in all that pertains to that branch of engineering; they make surveys, traverse them, calculate contents, divide upland, and solve problems in heights and distances from data taken by the members themselves. They also determine the meridian and take observations for latitude. This work is done during the fall months of the Junior year; during the winter the finished plans of the surveys are made.

The classes in railroad engineering have practice in running curves and levels, and in the measurement of earthwork. They are also, near the close of the Junior year, taken into the field, as a railroad party, under competent and skilled supervision, for two or three weeks continuously, when they go through all the field work for a projected line; reconnoisance, preliminary and location surveys, cross sectioning, staking out, contouring and topography, doing all the work up to the point of actual construction. An accurate plan and profile, carefully made by each student from the field notes of the party, completes this portion of the subject, and serves to fix the practical application of the principles obtained from the text-books and lectures.

A course of instruction is given in Analytical and Applied Mechanics, by both text-book and lectures, the work being shaped especially for the needs of engineering students.

The study of the Strength of Materials and the Theory of Construction covers a course of recitations and lectures for an entire year. Rankine's Manual of Civil Engineering is used during the greater portion of this time, with full explanations, examples and problems. The student is made familiar with both the analytical and graphical methods of treatment, as recently developed and applied, and thus possesses an advantageous proof of the accuracy of his calculations. The instruction is illustrated also by models, including a fine collection of details of Iron Bridges, reproduced in wood, to one-third scale, by Carl Bock, of Dresden, large photographs of public works, lithographs and drawings, to all of which classes additions are being made. The latest and best books on professional subjects are added yearly to the library, where they are accessible to all, and frequent references are made to them in the class room, as the various subjects are brought forward.

Contemporaneously with this course of study the class are required to work out problems in engineering design, or the application of theory to actual cases. The students are furnished with the usual data for a design, and the kind or type of structure is indicated. They are then expected to make the necessary calculations for proportioning the different parts, and to present, at a specified date, complete working drawings, with full details and figured dimensions, accompanied by bills of material. The graphical method is applied to each problem.

A very extended and complete course of Mechanical Drawing, with kindred studies, is pursued during the greater part of the four years. It commences, in the Freshman year, with Warren's Plane Projection Drawing, and the first principles of coloring, shading, determination of shadows, isometric projection, etc. In the Sophomore year the class take up Descriptive Geometry, with construction of original problems in the drawing-rooms, then the principles of Ornamentation and Lettering, and finally Topographical Drawing and the use of conventional signs. In the Junior year, plans of surveys and a map and profile of the railroad line run by the class are made; and the students are also instructed in Shades and Shadows, Linear Perspective, and Drawing for Stone Cutting. Examples from numerical data are always given. The Senior Class, in addition to the Engineering Design, previously mentioned, have also instruction and practice in Machine Drawing. Instruction is given to the Scientific students in Free-hand Drawing, which will be open to those Engineering students who desire it.

A course of lectures is given on Pure Mechanism, and is followed by one on Machinery, and an explanation and analysis of the action of the Prime Movers, Water Wheels, the Steam Engine, etc.

The drawings made by the different classes during the year are retained until the close of the same, when they are displayed, at Commencement, in the several drawing-rooms, to those who may desire to inspect them.

Examinations, usually written, are held at the close of each study, or at the end of a semester. But at any time, without previous notice, the classes may be examined on any portion of their previous work, to test their actual knowledge, and as much account will be made of the results of such examinations as of the regular ones, to determine the student's fitness to pass in that branch.

REQUIREMENTS FOR ADMISSION.

The requirements for admission are the same as those for admission to the Scientific Course. They may be found on pp. 33 and 34.

THE COURSE OF STUDY.

The course of study at present pursued is as follows, the technical branches being printed in SMALL CAPITALS. (Those branches not technical will be found much more in detail on pp. 37–44.)

FRESHMEN.—*Mathematics.*—Part III. of Olney's Geometry. Plane and Spherical Trigonometry. Part III. of Olney's Algebra, or an equivalent in other authors.

GEOMETRICAL DRAWING.—Warren's Plane Projection Drawing. Use of India Ink and Water Colors. Isometric Projection.

History.—Ancient History; Rawlinson, Smith, and Liddel.

French.—Translation from French into English, and from English into French. French Composition and Conversation.

English Language. — Lectures. Exercises in Elocution and in Grammatical Criticism.

Rhetoric.—Lectures, with Day's Art of Discourse. Exercises in English Composition.

Botany (Optional).—Elements of Structural and Systematic Botany.

SOPHOMORES.—DESCRIPTIVE GEOMETRY.— Church's, and Drawing of Problems in Descriptive Geometry.

Drawing.—Ornamentation and Lettering. Topographical Drawing.

Mathematics.—General Geometry and Calculus.

German.—Whitney's Grammar, Exercises, and Reader. German Composition and Conversation.

Chemistry.—Elementary Chemistry. Heat, Electricity and Magnetism. Lectures.

Astronomy.—Descriptive.

JUNIORS.—SURVEYING.—Lectures. Theory and adjustments of Level, Transit, Compass, Solar Compass, Plane Table, and Sextant. Henck's Field Book for Engineers. Rankine's Civil Engineering, Part III., Chap. I. Levelling, Topography, Staking out work, Computation of Quantities, Preparation of Estimates, Field Practice, Drawing of Plans, Maps, and Profiles;—all with special reference to the details of actual practice.

ASTRONOMY.—Computation of Time, Latitude and Longitude.

Mathematics.—General Geometry and Calculus.

Physics.—Mechanics, Acoustics and Optics. Deschanel's Textbook. Lectures.

Analytical Mechanics.—Rankine's Applied Mechanics, with Lectures.

DRAWING.—Shades and Shadows, Church's. Linear Perspective. Stereotomy.

English.—Delivery of Original Speeches.

SENIORS.—CIVIL ENGINEERING.—Rankine's Civil Engineering, Parts II. and III., and Lectures. Materials and Structures. Principles of Stability and Strength, Resistance of Materials, Beams, Trusses, Girders, Roofs, Bridges, in Wood and Iron; Arches, in Stone and Iron; Stress Diagrams and Graphical Methods; Earthwork, Masonry, Retaining Walls, Foundations, Tunnels, Flow and Distribution of Water. Drainage and Sewerage. Canals and Tidal Works.

ENGINEERING DESIGN.—Problems in Designing Roofs, Bridges and Structures in Wood, Iron and Stone. Working and Detailed Drawings, Bills of Materials.

MACHINE DRAWING.—Warren's Drawing from Models and from Machinery. Lectures on Principles of Mechanism.

Prime Movers.—Theory and Construction of Machines. Water Wheels. Steam Engine.

Mineralogy and Geology.—Mineralogy and Lithology. Dynamical and Historical Geology.

Preparation of Graduating Thesis.

ADVANCED COURSE.

An advanced course of study is offered to graduates of the Civil Engineering Course and to Resident Graduates. It will consist of

CIVIL ENGINEERING.—Further investigations of the Theory of Construction, more especially in the direction of Continuous Girders, Revolving Draw-Spans, Rigid and Braced Arches, etc.

Also of a more extended course on the Steam Engine and other Prime Movers.

PROJECTS IN ENGINEERING.

MATHEMATICS.—Calculus of Variations.

ASTRONOMY.—*Theoretical Astronomy.*—Numerical Calculus, Theory of Interpolation and Quadratures, Method of Least Squares. Calculation of the special and general Perturbations of Planets and Perturbations of Comets.

PHYSICS.—Work in Physical Laboratory and Mathematical Theory of Light and Sound. Heat, Electricity and Magnetism.

CHEMISTRY.—Qualitative and Quantitative Analysis.

GERMAN AND FRENCH.—Advanced Studies.

II. SCHOOL OF MINES.

At the last session of the State Legislature, an act was passed to provide for the establishment of a School of Mines at the University. In this act provision was made for the appointment of a Professor of Mining Engineering, a Professor of Metallurgy, and a Professor of Architecture and Design, with the necessary assistant instructors. A liberal appropriation was also made for the purchase of special apparatus and for the general equipment of the School. In compliance with this act of the Legislature, the school was opened for the reception of students at the beginning of the current year, and steady progress has been made in the fitting up of the metallurgical laboratory, and in securing the necessary appliances for imparting the highest theoretical and best practical instruction possible.

The requirements for admission to the School of Mines are the same as those for admission to the Scientific Course. See page 33.

The regular course of study will cover four years, but students may be admitted to advanced standing, if properly qualified, at any time prior to the beginning of the fourth year. Those who complete the full course of study, pass all the required examinations, and present a satisfactory thesis upon some topic connected with mining or metallurgy, will receive the degree of Mining Engineer. Special students, not candidates for a degree, may also be allowed to take such portions of the course of study as they may be found qualified, upon examination, to take with profit.

For the first two years the studies pursued by the students in this School correspond very nearly with those pursued by the candidates for the degree of Civil Engineer, but it has been thought desirable to introduce the technical branches at an earlier stage than has hitherto been practicable in the Engineering Courses. This, it is hoped, can be accomplished without detriment to the general culture of the student. In the last two years of the course the chief attention will be directed to the subjects of Mineralogy, Geology, and Chemistry, with their applications to Mining Metallurgy, and Assaying. The details of mining and metallurgical practice will be taught in the fourth year.

COURSE OF STUDY.

FRESHMEN.—*Mathematics.*—Same as in Civil Engineering, Freshmen.

Geometrical Drawing.—Same as in Civil Engineering, Freshmen.
French.—Same as in Civil Engineering, Freshmen.
English Exercises.—Same as in Civil Engineering, Freshmen.
Descriptive Geometry.—With Civil Engineering Sophomores.
Chemistry.—With Civil Engineering Sophomores.

SOPHOMORES.—*Mathematics.*—With Civil Engineering Sophomores.

German.—With Civil Engineering Sophomores.

Descriptive Astronomy.—With Civil Engineering Sophomores.

Essays.—With Civil Engineering Sophomores.

Physics.—With Civil Engineering Juniors.

Perspective Drawing.—With Civil Engineering Juniors.

Analytical Chemistry, qualitative.—See page 77.

JUNIORS.—*Analytical Mechanics.*—With Civil Engineering Juniors.

Land Surveying and Field Work.—With Civil Engineering Juniors.

Mine Surveying.—Lectures. Practice upon problems and in plotting. Study of plans and sections of mines.

Mineralogy and Lithology.—Lectures. Dana's System of Mineralogy. Von Cotta and Lawrence's Lithology. Systematic Practice in determining minerals and rocks by means of their physical properties and with the aid of the blow pipe. Brush's Determinative Mineralogy.

Analytical Chemistry, quantitative.—See page 77.

Assaying.—See page 78.

Geology.—Elements.

SENIORS.—*Engineering.*—Resistance of Materials. With Civil Engineering Seniors.

Machine Drawing.—With Civil Engineering Seniors.

Geology.—Dana's Manual of Geology. Lectures. Economic Geology. Phenomena of Veins and Mineral Deposits. Von Cotta's Treatise on Ore Deposits, translated by Prime. Special Geology of mining districts. Palæontology.

Analytical Chemistry.—Examination of fuels, furnace products, slags, and refractory materials. Gas analysis, analysis of air of mines.

Mining Engineering.—Lectures, with constant reference to standard works. Explorations, boring, shaft sinking, tunnelling, laying out of mines, excavation, motors, transportation, hoisting, ventilation, drainage, and pumping, the water supply, treatment of fires in mines, ore dressing, and the elucidation of the principles involved in each case.

Metallurgy.—Lectures, with frequent reference to the works of Percy, Kerl, Phillips, and others. Principles of smelting; fuels; furnace construction; fire-proof materials; problems in calorific power and calorific intensity; slags; special processes for copper, lead, silver, gold; metallurgy of iron; varieties of iron and steel; treatment of ores containing arsenic, antimony, nickel, cobalt, bismuth, tin, and other metals.

For the first two years students of the School of Mines pursue all their studies, with the exception of the Analytical Chemistry of the Sophomore year, in connection with the Civil Engineering classes; but for the remainder of the time the separation between the courses of Civil and Mining Engineering is more marked. For details relating to the branches pursued in common in the two courses, reference is made to the remarks made under the head of Civil Engineering, page 59.

Chemistry is made an important study almost from the beginning of the course, the elements of the science in connection with the phenomena of heat, electricity and magnetism being taken up by lectures and recitations in the second semester of the Freshman year. Qualitative Analysis is begun in the Sophomore year, and Quantitative Analysis is kept up during the two following years. For further information upon this point see pages 76–78.

The course in *Mineralogy* and *Lithology* will be made thorough and practical. The first subject in order is Crystallography which will be fully illustrated by means of sciopticon projections and by a large collection of wooden models, with which each student will be obliged to make himself familiar. A set of over sixty glass models, imported from Germany last autumn, adds materially to the facilities of instruction in this branch of the subject. Following Crystallography, the other physical properties of minerals, such as hardness, lustre, diaphaneity, color, and structure, are taken up in turn, and the student is made familiar with their relative importance as means of identifying mineral species. Special descriptive Mineralogy comes next, and the more important species of minerals will be studied in detail, with constant reference to Dana's System of Mineralogy. Upon the completion of the descriptive portion of the subject, the study of Lithology will be pursued in a similar manner, necessitating a constant application of the knowledge gained in the preceding part of the course.

The mineralogical cabinet contains about 8,000 specimens, embracing all the varieties of iron, copper, and silver ores and their associated minerals from the different localities of the Lake Superior mining district, as well as rare collections from other States and from foreign lands. In addition to the large cabinet, a working collection of nearly a thousand specimens of the more common minerals, ores, and rocks in all their varieties and groupings is in preparation and will be ready for use by the beginning of the next University year. This collection will be freely accessible to the students for study and practice, under suitable restrictions to prevent any unnecessary damage to the specimens.

Geology will be commenced in the second semester of the Junior year, and continued through the whole of the Senior year. The subject will be taught by lectures, recitations, and the free use of the extensive geological collections belonging to the University. See pp. 12 and 13. Particular attention will be paid to the geology of mines and mineral districts, and to the modes of occurrence of mineral substances which have an economical or commercial importance. Palæontology will be taught so far as to enable the student to recognize the leading American fossils. The several State Geological Reports will be referred to for details relating to the mineral wealth of the country, and the methods and objects of geological surveys will be explained.

In *Mining Engineering* the instruction will be given mainly by lectures. The machines in use at the best mines will be described, and the mutual relations of parts explained and illustrated with the aid of plates and diagrams; and the different operations connected with the discovery, opening, development, and working of mines will be studied in their proper order. Models of mines and mining machinery will be accumulated as rapidly as circumstances admit.

The facilities for instruction in *Metallurgy* are of a very high grade. This branch will be taken up in the Senior year, after a solid foundation has been laid by at least two years of work in the Chemical Laboratory. There will be an extensive course of lectures and recitations upon the more theoretical aspects of the subject, and the students will be thoroughly drilled in the fundamental principles upon which all successful smelting operations have to be conducted. A large and convenient Metallurgical Laboratory has been recently fitted up in connection with the Chemical Laboratory. It contains already a small Blake crusher, a California stamp mill with two stamps driven by steam power, two Hibbs's cupel furnaces, four large wind furnaces, and a blacksmith's forge and anvil. Additional apparatus is to be procured before the end of the current year. A large quantity of ores and furnace products has been obtained from the Wyandotte Silver

Smelting and Refining Company, and from Nevada, to which additions will be made from time to time. The ores of the Lake Superior region will always be fully represented. In this laboratory the subject of Assaying can be taught to great advantage.

The formation of a metallurgical and industrial cabinet will also be made an important duty in connection with this department. A model collection of iron ores and furnace products has lately been secured for this collection at Cincinnati, and it is hoped that numerous contributions will be made to this cabinet from friends of the University and of this School.

ARCHITECTURE AND DESIGN.

A course in Architecture and Design will be opened in September, 1876. Although the studies for the later years are not yet finally arranged, the earlier portion of the course will agree closely with that of Civil Engineering. All the principles of Drawing, both mechanical and free-hand, which are necessary for working out designs and making detailed drawings, will be given, and the student will be exercised, in the recitation and drawing rooms, with problems involving, as far as possible, all the conditions of actual practice. A complete course of instruction on Resistance of Materials and on the determination of Stresses in Frames, both analytically and graphically, will be given. The lectures and instruction will be illustrated by models, photographs, and samples of materials. Building processes and professional practice will be explained. Lectures will be given upon ornament, composition and the theory and history of architecture.

The requirements for admission are the same as those for the Scientific Course, and will be found in detail on page 34.

MECHANICAL ENGINEERING.

While no course of instruction looking to this profession has been established, the greater part of the studies prescribed for the students in Civil Engineering will be found needful by those students in Selected Studies who may wish to devote especial attention to this branch. In the Senior year, the instruction more akin to Mechanical Engineering is: Pure Mechanism, or the General Principles of Machinery, including Gearing, Cams, Screws, Cranks and Levers, with Problems and Machine Drawing; also, Lectures upon the Prime

Movers, Water Wheels and the Steam Engine. This work may be taken by students in Selected Studies, one year earlier, in place of Surveying, and in the next year they can take up Rankine's "Machinery and Millwork," and Rankine's "Steam Engine and other Prime Movers," a more extended course than is pursued by the other classes. They may also have practice in the Chemical Laboratory, in Qualitative and Quantitative Analysis, with special reference to the Metallurgy of Iron and Steel.

III. SPECIAL AND ADVANCED COURSES IN SCIENCE.

I.—MINERALOGY AND GEOLOGY.

The *general* course in these sciences covers a semester and a half, during which the students attend the same exercises as those of the Classical and Scientific courses, with the addition of special practice hours.

Advanced students, or those who have completed the *general* course, will be furnished with the requisite facilities for a further prosecution of their studies in connection with the special course in Palaeontology or with the classes in the School of Mines.

Crystallography is the subject first in order, and is pursued by lectures, "quizzes," demonstrations by means of the magic lantern, and practice on a large collection of wooden models, until the student is sufficiently familiar with the primary and secondary forms of each system to pass to the determination of natural crystals. This leads to the discussion of the irregularities of crystals, compound crystals, pseudomorphs, etc.; all illustrated by specimens and demonstrations on the screen.

The other physical properties which may serve for the identification of minerals, such as hardness, lustre, diaphaneity, color, structure, etc., are next illustrated by specimens, and the student is practised in the description of natural specimens.

Special descriptive *Mineralogy* comes next. The more important species of minerals are taken up successively. The Professor first illustrates on the screen the chief crystalline forms of each, then discusses by lecture its varieties, occurrence and uses, and illustrates them by specimens passed around among the class. At the beginning of each hour, the subjects of the preceding lecture are recapitulated by recitation.

A selected suite of specimens is deposited in a case in the lecture room, and remains accessible to students for study, at all times, under suitable restriction, to insure preservation.

The student having thus been made acquainted with the chief rock-forming and technically important minerals and ores, the subject of *Lithology* is next introduced, and treated in an analogous manner; the composition of rocks being illustrated by a reintroduction of their component minerals, as well as by specimens of the rocks themselves.

From Lithology the course passes, in the second semester, first to general and dynamical, and finally to historical *Geology*. These are all taught by the demonstrative and objective method, to the fullest extent. A large collection of magic-lantern slides, designed to illustrate every point in dynamical geology, the leading fossils of all formations, both American and foreign, the geological and palæontological cabinet, and geological and physico-geographical maps, diagrams and models, admit of great completeness in this respect.

Advanced students, or those having completed the course of Mineralogy and Geology, will be furnished with the requisite facilities for a further prosecution of their studies, in connection with a special course on the geology of mines and mineral districts of the world.

II.—ZOOLOGY AND BOTANY.

Special courses in *Zoölogy and Botany* continue through the academic year. These courses are so divided that the work of either semester may be omitted without especial detriment to that of the other. Wherever practicable, however, the student is advised to take the two courses together, and to prepare for them by taking the preliminary courses of the academic classes.

The special course in *Zoölogy* for the first semester consists of the study of *Comparative Anatomy and Physiology*. Chauveau's "Anatomy of the Domesticated Animals," Marey's "Animal Machine," Gray's "Human Anatomy," Carpenter's "Comparative Physiology," and Carpenter's "Mental Physiology" are the books of reference for this course.

The work consists of the examination of specimens, dissections, and the use of instruments, accompanied by about thirty lectures. In the practical work the skeleton, muscles and principal viscera are studied. The lectures include the topics of the tegumentary system, bone, skeleton, muscle, locomotion, nervous system, innervation and the special senses. The student is required to make his dissections and demonstrations for himself. A course in human anatomy may form a practical part of the work when desired.

In the second semester is given a course in *Systematic Zoölogy.* The principles of classification are given in a course of familiar lectures, and the student is taught to recognize the order of most animals at sight. A single branch of the subject, ornithology for example, is then taken up and pursued in more detail.

The special course in *Botany* for the first semester is a course for the study of *Cryptogamic Plants* by alternating lectures and the analysis o species, with observations of their anatomy and physiology. Sachs' "Text-book of Botany," Le Maout and Decaisne's "Botany," Hooker and Baker's "Synopsis Filicum," Sullivant's "Icones Muscorum," an edition of Gray's Manual of Botany containing the Mosses and Hepaticæ, Cooke's "Fungi" and Cooke's "Hand-book of the British Fungi," are the most important books of reference for this course.

In the second semester *Structural and Physiological Botany* will be continued to the end of the year. The practical work will consist of, 1st, The microscopical examination of plant tissues illustrated by drawings and descriptions, and tested by the identification of unknown vegetable substances in powder; 2d, Investigation of the physiological data for plants, by means of instruments made for the purpose. This part of the course will be enlarged as rapidly as the necessary instruments can be provided. The practical work will be accompanied by lectures and recitations. The books of reference are Sachs' "Text-book of Botany," and "Handbuch der Experimental-Physiologie," Johnson's "How Crops Feed" and "How Crops Grow," Harrington's "Microscopical Examination of Crude Drugs and other Vegetable Products," and Schacht's "Mikroskop und seine Anwendung."

These courses will be made as practical as possible. For this purpose the student will be expected to apply for a table in the MICROSCOPICAL LABORATORY, where all the necessary materials, microscopes and other instruments, will be provided at a cost only sufficient to cover actual expense on the part of the University. The amount of cost will depend on the care and economy practised by the student.

The Microscopical Laboratory is now so well supplied with instruments that it can respond to any moderate demand made on its resources. Students in Biology, Embryology, Structural, Physiological and Cryptogamic Botany and, to a slight extent, those in advanced Zoölogy perform a part of this work here. Instruction is given in Practical Microscopy, the use of micro-chemical reagents and other methods of observation, in drawing and measuring from the microscope, etc. Hereafter the instruments and other means for the investigation of Physiology, especially that of plants, will be added as rapidly as possible. These will be placed in the hands of the student, who will be expected to obtain the physiological data for himself. The Microscopical Laboratory is open from 8¼ to 12½ o'clock as many mornings in the week as the work of the classes requires. A charge is made of 50 cents per month for the use of each microscope. A corresponding charge is made for the other instruments and materials used by the students, when the University provides them. The student is required to make a deposit of two dollars with the Steward of the University before his application for a table can be entered. Students are responsible for the apparatus furnished them, and are required to make good any injury to the instruments under their charge.

The best text-books on the microscope and its use are as follows :

General—Carpenter's "Microscope," Beale's "How to Work the Microscope," the "Microscopic Dictionary."

Animal Histology, (mostly human)—Frey's "Microscope and Microscopical Technology," Stricker's "Manual of Histology," Kölliker's "Histology," Sanderson's "Hand-book of the Physiological Laboratory."

Botanical—Schacht, "Mikroskop und seine Anwendung," Van Heurck's "Microscope et son application aux études d'anatomie, végétale," Flückiger & Hanbury's "Pharmacographia," Vogl's "Nahrungs und Genuss-mittel," etc., etc.

The Botanical Course in the School of Pharmacy is described on page 80.

The University possesses ample means for the illustration of the courses in Mineralogy, Geology, Zoölogy and Botany, in the large collections in the Museum, microscopes, and rooms specially adapted to this work. For aid in the course in Comparative Anatomy and Physiology, a fine set of typical skeletons has recently been procured.

III.—PHYSICS.

Instruction is given both by text-books and lectures in Mechanics of solids, liquids and gases, and in Acoustics and Optics. The subjects are treated both experimentally and theoretically. The Mechanics in the first part of the course serves as a preparation for the study of General Physics, and also as an introduction to the further study of Theoretical and Applied Mechanics.

The amount of physical apparatus, which has been largely increased and is still receiving additions, affords quite ample illustration in the course of instruction. The principles are required to be applied to the solution of problems, the data of which in some cases are obtained from class experiments. The graphical method is employed both to verify computations and to compare the results of observation with theory.

Students in Engineering, and others who elect, pursue a more thorough course in Theoretical Mechanics during the second semester.

Recognizing the fact that a thorough mastery of the physical sciences can be obtained only through the experimental method combined with mathematical analysis, we have reserved a large room, which will probably be provided soon with furniture and apparatus requisite for laboratory work. Students taking this part of the course will be furnished with a description of the apparatus and directions for using it. Experiments will be assigned to each person, and he will be required to take full notes of his observations and to deduce their results. The design is to make the student familiar not only with the facts and laws of the science, but with the methods and instruments of physical investigation, to give opportunity for extended study in any particular subject of Physics, and to stimulate to original research. It is expected, too, that facilities will be afforded for the construction or modification of the more simple apparatus, as need may arise in the course of experimentation.

IV.—PURE MATHEMATICS.

The description of the work in Pure Mathematics will be found on page 41.

V.—ASTRONOMY.

The Course in Higher Astronomy embraces two years, and begins with the first semester of the Senior year.

The following subjects give direction to the lectures of the course:

Formation of the Fundamental Equations of Motion. Integration of the Equations for Undisturbed Motion, and Determination of the Elements of the Orbit. Theory of Interpolation. Calculation of Ephemerides.

Calculation of the Orbits of the Celestial Bodies from Three or more Observations. Correction of the Elements. Combination of Observations by the method of Least Squares. Special and General Perturbations. Determination of Time, Latitude, and Longitude.

Theory of the Instruments.

During the course the student has access to the instruments of the Observatory, under the special direction of the Professor, and is permitted to take part in the observations.

VI.—MODERN LANGUAGES.

Large facilities are furnished for the study of the Modern Languages, with reference to the oral use of them, or to the reading of foreign treatises on Science. A detailed description of the work is found on page 39.

VII.—CHEMISTRY.

The preparations for giving instruction in General Chemistry, Chemical Physics, Analytical and Applied Chemistry, Metallurgy and Pharmacy are most ample and complete. The lecture-room in Chemical Physics and General Chemistry will accommodate nearly five hundred students, and is arranged with elevated seats, having special reference to experimental illustration. The lectures are illustrated by the use of a large collection of the most approved apparatus, covering the subjects of Heat, Spectrum Analysis, Electricity, and General Chemistry. The use of the lantern, of the most approved construction, lighted by the calcium light or electric discharge, enables the Professor to exhibit delicate experiments upon the screen, so as to be seen by a large audience. These lectures are made as practical, in the ordinary affairs of life, as strict science will permit. The instruction in Metallurgy is illustrated by the use of a rare and expensive collection of furnace models constructed upon an accurate scale; embracing models for the smelting of Iron and Copper, Lead, Silver and Zinc, and for the manufacture of Steel and Glass.

The Laboratory of Analytical and Applied Chemistry is one of the largest in this country, occupying a ground space of 15,000 square feet. There are one hundred and seventy-five tables, adapted to the various courses. Each table is for the exclusive use of one student, and is supplied with gas, water, and wash-basin and waste-pipe, as well as all the apparatus necessary for the laboratory work. Each student has an average area of fifty-five square feet, and an air space of eight hundred cubic feet. This laboratory is heated by steam, and furnished with six of the most approved sand, water and steam baths and drying ovens. The general furnace room (30 by 100 feet) is supplied with assay, blast, and other metallurgic furnaces, and all the apparatus for organic analysis. The balance room is furnished with Oertling and Becker & Son's balances. In the Library-room there will be found, for consultation, all the standard works on Chemistry and the allied sciences, as well as the leading European and American periodicals.

The whole Laboratory is ventilated by two large Sturtevant fan ventilators, propelled by steam power.

Expenses of the Laboratory.—It is the design of the Regents that the chemicals and apparatus actually consumed in the individual manipulations of the student, shall be paid for by him. With this view the student on entering the Laboratory makes a deposit of ten dollars, a complete suit of apparatus is inventoried to him, and from time to time additional supplies are furnished. An accurate account is kept. On leaving the Laboratory he is credited with what may remain unconsumed, and the balance is struck. All supplies are furnished the student at the printed price-current of New York dealers. The Laboratory expenses of students will vary with their prudence and economy. Experience has shown that the average is one dollar and ten cents per week for all Laboratory courses.

VIII.—ANALYTICAL AND APPLIED CHEMISTRY.

1. *Requirements for admission to the Laboratory.* — Before commencing work at his table, the student must be able to write the formulæ of salts. To do this, he must be prepared in the

constitution of the acids and the quantivalence of the metals, and in the rules of combination. Miller's Introduction to Inorganic Chemistry is advised for this preparation, but any text-book of elementary chemistry (written in the modern notation), such as Roscoe's, may be used. The completion of Qualitative Analysis is a requisite for admission to any other course of laboratory work.

2. *Qualitative Analysis.*—(1) Study of the characteristics of the acids and bases in *known material.* This study is pursued by operations of analysis, as required in identifying and separating compounds; operations of synthesis, showing the action of compounds upon each other; by use of the text-books of analysis and of general chemistry, for each acid and base; and by constructing statements of all chemical changes, in equations. When able to pass examination upon the means of identifying and separating each acid and base, and upon their incompatibilities with each other, and to write and explain the chemical equations (which must now be submitted with notes of the work in permanent form) the student is passed to the latter part of qualitative work. (2) The *analysis of Unknown Materials.* Each student receives a separate set, comprising sixty unknown mixtures (solids and solutions). After analysis of each five mixtures, the student reports his results. When the analyses have been all correctly reported, and the study of oxidizing and reducing agents is completed, the student receives the final qualitative examination. The text-book is Douglas and Prescott's Qualitative Analysis, and for general Chemistry, Bloxam's Chemistry, or Miller's Inorganic. Reference should be made to Storer's Dictionary of Solubilities, and Watts' Dictionary of Chemistry, in the library.

3. *Blow-pipe Analysis.*—The Determination of one hundred representative minerals, by qualitative blow-pipe analysis. Text-book, Brush's Manual, with the secondary use of Dana's Manual of Mineralogy and with reference to Dana's System. The last mentioned work is provided at the laboratory. Plattner's Manual (required for the work in Assaying) is a valuable work of reference in this course.

4. *Quantitative Analysis.*—(1) Determinations of Density of Solids and Liquids. (2) Gravimetric Determinations. (3) Volumetric Determinations. (4) Gravimetric Separations. (5) Industrial and Commercial Analyses, comprising work upon the materials of that branch of applied chemistry chosen by the student, as follows: For Metallurgy and Mining,—ores, gangues, slags, fluxes, furnace materials, fuels, pig iron and steel, etc. For Manufactures,—the crude materials and raw and refined products of the chemical manufactures, paints, glass and pottery, cements, etc. For Agriculture—fertilizers and ash

of plants. The analysis of mineral and potable waters is included in this division. In the class-room, a study is made of quantitative determinations and separations, extending beyond those performed in the laboratory. Text-book: Fresenius' Quantitative Analysis, with references to the works of Storer, Thorpe, Noad, Crookes, Normandy, Rammelsberg and others, in the library.

5. *Assaying.*—(1) Practice in the *blow-pipe* assay of the precious metals, copper and lead, taken in alloy and in ore. Guide, Plattner's Manual of Qualitative and Quantitative Analysis with the blow-pipe. (2) *Volumetric* determinations of iron, and silver,—following Fresenius. (3) The *crucible* assay of the precious and base metals, from their ores. Mitchell's Assaying is the work most in requisition, for methods by crucible and scorification.

6. *For the Detection and Estimation of Impurities* in articles of commerce, the analyst requires training in Qualitative Analysis (2) Quantitative Analysis (4), Proximate Organic Analysis (Pharmacy, 12), and in Pharmaceutical Botany and Microscopy (Pharmacy 7). With and after the work in Proximate Organic Analysis, there is practice in analyses of foods, condiments, alcoholic liquors, oils, soaps, medicinal mixtures, etc. The exercises in the recognition and estimation of impurities and substitutions embrace examinations of articles used in the various industrial arts and in the household, or brought in question in the service of hygiene. Lectures are given on these subjects, as explained under Pharmacy, 11 and 13. Besides the books elsewhere referred to, the recent works of Wanklyn (Milk, Tea, Coffee, Cocoa, etc.), Hager's Untersuchungen, and the (London) Pharmaceutical Journal for the last five years, are especially useful.

7. *Toxicology.*—Analyses of food material or tissue material in assumed cases of poisoning and in cases instituted with animals,—including the chief inorganic and organic poisons. Lectures and class-drills accompany the laboratory work. Reference is made to the works of Otto, Wormley, Reese, Taylor.

8. *Physiological and Pathological Analysis.*—Analyses of Urine, normal and abnormal, by qualitative, volumetric and microscopical methods. Examinations of tissue materials, excretions, blood-stains, etc. Reference to the works of Hassall, Beal, Carpenter, Burdon-Sanderson.

IV. SCHOOL OF PHARMACY.

This branch of the Polytechnic School provides a two years' course. Those who complete the course receive the Degree of Pharmaceutical Chemist. It is designed to qualify its graduates as follows, viz.:

To determine the purity and strength of the materials in pharmaceutical commerce, to act as general analysts, and to manufacture and dispense chemical and pharmaceutical preparations. The training in the determination of materials includes chemical analysis, qualitative, quantitative, organic, and commercial; botanical analysis, systematic and structural; microscopical examinations; practice in crystallography, and practical studies of materia medica,—all the means of examination being applied to the detection of impurities. The work upon manufactures embraces systematic studies of the chief chemical industries, with analyses of their products. The preparation for the more immediate duties of the dispensing pharmacist includes a study of the pharmacopœias and of the details of pharmacy, and practice in the officinal and extemporaneous preparations. Farther, it should be understood that the mental and manual discipline of systematic work in experimental science is exceedingly valuable to those who would become exact and reliable pharmacists.

The subjects are pursued by class work and laboratory work, simultaneously. The class work includes recitations and lectures,—the recitations being given from text-books, or from laboratory work, or from books of reference with lectures. All the class work is provided separately for first-year and second-year students, the former being taken in two sections for a portion of their drill. The required laboratory work employs about four hours daily through both years,—each student working and advancing independently of other students, and receiving separate examination at the completion of each branch.

It is REQUIRED FOR ADMISSION to the School of Pharmacy that the student possess a good knowledge of the use of the English language, as determined by written examination. The examination for admission is held on the 30th of September.

Concerning admission to the Laboratory, see Applied Chemistry, page 76. Students not fully prepared in chemical notation are requested to present themselves at the laboratory class-room, one week before the opening of the term (Sep. 25, 1876, 3 P. M.), for daily exercises in this preparation.

FIRST YEAR.

1. *Chemical Physics and Inorganic Chemistry.*—In the First Semester, *illustrated lectures*, upon the rudiments of these subjects, three and four times a week, and *recitations* three times a week upon the lectures with the use of Miller's Chemical Physics and Bloxam's Chemistry. In the Second Semester, lectures alternating with recita-

tions, continuing the subjects in advance of the work of the First Semester, with use of the same text books. At the close of the First Semester, examination is held upon the work gone over, and the final examination is made at the close of the year.

2. *Analytical Chemistry.*—Lectures and class-drills upon the laboratory work, and upon chemical problems, with recitations from the text-book in Qualitative, daily until the spring recess.

3. *Pharmacy.*—First, the study of pharmaceutical and manufacturing *operations*, based upon chemical physics, by lectures and class-drills, three times a week, from the holidays to the close of the first semester. Second, the study of the Pharmacopœias and of *inorganic* chemicals (metalloids), by lectures and recitations, three times a week until the spring recess. The student must use the U. S. Pharmacopœia (in addition to Chemical Physics and Chemistry), and will have much advantage in the possession of the U. S. Dispensatory or Parrish's Pharmacy. Examination at the close of each part of the course.

4. *Botany.*—Recitations with Gray's Lessons and practical studies with fresh plants (use of Gray's Manual) daily from the spring recess to the week before the June Commencement. Special attention is given to indigenous medicinal plants.

5. The Course in *Qualitative Analysis* is defined at p. 77, its completion being requisite for the undertaking of other work in the School of Pharmacy. The student is held to a careful qualification in the methods of analysis, in chemical equations, and especially in the reactions of synthetical importance (incompatibilities), while engaged upon the known material. The class-drills in Analytical Chemistry (2) are indispensable. When found qualified (at examination given separately to each) the student passes to the analysis of the unknown mixtures, continuing the study of chemical changes, chiefly of oxidizing and reducing agents. On completion of the analyses, a final examination is given. The time required in the entire course averages about six months (five to eight); in the first part of the course, about two and a half months (two to four).

6. *Quantitative Analysis.*—(1) Determinations of Densities; (2) Gravimetric Determinations; (3) Volumetric Determinations; (4) Gravimetric Separations. *Class-Drills* in quantitative analysis are held three times a week, requiring a study of all the chief separations as well as those performed in the Laboratory. Text-books, Fresenius' Quantitative, with reference to Thorpe, and Wanklyn's Water Analysis.

SECOND YEAR.

7. *Pharmaceutical Botany.*—Exercises daily through the first semester, as follows; examination of fresh plants, continued, for the first six or eight weeks. Then lectures and exercises on structural botany, with reference to the identification of drugs of vegetable origin and the detection of adulterations in foods, condiments and medicines. The lectures alternate with work in the Microscopical Laboratory, embracing a systematic course in examination of a series of commercial articles, with use of Harrington's Microscopical Examination of Crude Drugs and other Vegetable Products. Examination at the close of the first semester. Examination when concluded.

8. *Crystallography.*—Twelve to Fifteen Lectures on systematic crystallography with exercises in identifying crystals, in the first half of the first semester.

9. *Materia Medica.*—Recitations once a week through the first six months of the term, and lectures four times a week for three months. A collection of crude drugs and pharmacopœial preparations, in the chemical laboratory, is used by the class in study for the recitations. Text-book, Biddle. Examination, just before the spring recess.

10. *Organic Chemistry.*—Lectures on the rudimentary chemistry of carbon compounds. Foods, tissue substances, materials of industrial importance. *Toxicology* by lectures. From the beginning of the second semester to the spring recess, four times a week.

11. *Pharmacy.*—First, of *inorganic* materials (metals) and the technical history of chemical wares, by lectures, and recitations from works of reference and from laboratory work, through the first semester. The student should have ready access to the U. S. Dispensatory, and keep at hand the prices current. Second, of *organic* chemistry and materials, lectures, and recitations from Proximate Organic Analysis, through the second semester. For the first six months of the term, three times a week; for the last three months of the term, five times a week.

12. *Organic Analysis.*—(1) Ultimate Organic Analysis; (2) Verification of the reactions of carbon compounds in a series of known mixtures; (3) Qualitative Analysis of a series of organic mixtures; (4) Quantitative estimation of organic drugs. Text-book, Prescott's Proximate Organic Analysis.

13. *Commercial Examinations.*—The detection and estimation of impurities in articles important in commerce,—such as medicines (both authorized and proprietary), condiments and foods, pigments, detergents and chemicals used in the industrial arts—the examinations being chem-

ical and microscopical, as required. The material will be separately assigned to each student. Students are invited to propose articles and to assist in collecting a sufficient number of samples. The work requires the use of all the text-books before mentioned, with reference to the works of Hassall, Wanklyn, Normandy, Fluckiger and Hanbury, and other authorities in the library.

14. *Toxicology.*	Courses of laboratory work defined at p. 67. Class Lectures are given in connection with each.
15. *Analysis of Urine.*	

16. *Pharmacopœial Preparations.*—Exercises in each class, U. S. Pharmacopœia; in some of the more elaborate chemical productions; in the minor performances of extemporaneous pharmacy, and in reading and preparing prescriptions. Use of the U. S. Pharmacopœia, with reference to the U. S. Dispensatory. The student derives advantage from ready access to Parrish's Pharmacy and to Wittstein's Pharmaceutical Chemistry.

17. *The Thesis* for the degree of Pharmaceutical Chemist is required to embody the results of investigation by the student under direction of the professor in charge of the subject chosen, which must be accepted by the Faculty as early as the first of April. The investigation may consist of examinations of articles in commerce or in nature, trials of methods of analysis, collections of natural articles, preparation or extraction of rare substances, improvement in methods of preparation, or personal research in *any subject of the course.* A careful comparison of authorities must first be made and references given.

The required *text-books* are named in connection with the work for which they are used, as are also some of the *works of reference* most frequently needful. For use in the preparation for laboratory work, Miller's Introduction to Inorganic Chemistry is advised, but any good manual of elementary chemistry (using the modern notation) may be employed. Attfield's Chemistry may be used in preparation and is valuable through the course. Students are not required to provide themselves with the works of reference, many of which are furnished at the laboratory. Storer's Dictionary of Solubilities and Watts' Dictionary of Chemistry should be very frequently consulted. The following are also valuable sources: Gmelin's Handbook of Chemistry; Bentley's Manual of Botany; Gray's Structural and Systematic Botany; Fresenius' Qualitative Analysis; Storer's Cyclopœdia of Quantitative Analysis; Rochleder's Chemical Analysis of Plants; Wormley's Micro-chemistry of Poisons; Otto's Poisons; Hassall's

Analysis of Urine; Beale's Works; Hoffman's Medicinal Chemicals; Hassall's Adulterations; Wanklyn's Tea, Coffee and Cocoa Analysis; Prescott's Examination of Alcoholic Liquors; Vogel's Nahrungs und Genussmittel; Hager's Untersuchungen; Heppe's Chemischen Reactionen; Wagner's Chemical Technology; Zeitschrift f. analyt. Chemie; Pharmaceutical Journal; Planchon's La determination des drogues vegetales; Fluckiger and Hanbury's Pharmacographia.

The term in Pharmacy commences October 2d, and closes at the June Commencement. All the studies before mentioned are required for graduation. Concerning expenses of laboratory work, see p. 65.

The following is a complete scheme of the Course in Pharmacy:

FIRST YEAR—First Semester.

Hours.	Class Work.
9½ to 10½	Analytical Chemistry (2)*—twice a week—until the holidays. Pharmacy (3)—three times a week—from holidays to the close. Chem. Physics and Inorganic Chemistry (1)—three times a week.
10½ to 11½	Analytical Chemistry (2)—daily.
5 to 6	Chemical Physics and Inorganic Chemistry (1) four times a week.

Laboratory Work.

1 to 5	Qualitative Analysis (5)—daily.

Second Semester.

Class Work.

9½ to 10½	Quantitative Analysis (6)—three times a week—from the recess to close.
10½ to 11½	Pharmacy (3)—three times a week—until recess. Botany (4)—five times a week—from the recess to the close.
11¼ to 12½	Inorganic Chemistry (1).

Laboratory Work.

1½ to 5½	Qualitative Analysis (5) (concluded). Quantitative Analysis (6).	daily.

SECOND YEAR—First Semester.

Class Work.

9½ to 10½ or -- to --	Pharmaceutical Botany (7)—daily.
10½ to 11½	Pharmacy (11)—three times a week. Materia Medica Recitations (9)—once a week. Crystallography (8)—twelve or fifteen lectures.
11½ to 12½	Quantitative Analysis (6)—three times a week—to holidays.
5 to 6 or -- to --	Materia Medica Lectures (9)—four times a week—for three months.

Laboratory Work.

1 to 5	Organic Analysis (12) Commercial Analysis (13)	daily.

Second Semester.

Class Work.

9½ to 10½ 11½ to 12½	to recess after recess	Pharmacy (11)	three times a week—to recess. daily, after recess.

9½ to 10½	Materia Medica Recitations (9)—once a week—to recess.	
10½ to 11½	Toxicology (14)—three times a week Anal. Urine (15)—twice a week	after the recess.

Laboratory Work.

1½ to 5½	Toxicology (14) Analysis of Urine (15)	daily until completed, then
	Pharmaceutical Preparations (16)—daily.	

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* The figures in parentheses refer to the numbering of the subjects given in the preceding pages.

THE FACULTY

OF

THE POLYTECHNIC SCHOOL.

JAMES B. ANGELL, LL. D.,
PRESIDENT.

SILAS H. DOUGLAS, M. A., M. D.,
JAMES C. WATSON, PH. B.,
EDWARD OLNEY, LL. D.,
ALBERT B. PRESCOTT, M. D.,
GEORGE S. MORRIS, M. A.,
CHARLES E. GREENE, M. A., C. E.,
MOSES COIT TYLER, LL. D.,
WILLIAM H. PETTEE, M. A.,
JOHN W. LANGLEY, B. S.,
JOSEPH B. DAVIS, C. E.,
MARK W. HARRINGTON, M. A.,
HARRY B. HUTCHINS, PH. D.,
WOOSTER W. BEMAN, M. A.,
PRESTON B. ROSE, M. A., M. D.,
P. R. B. DEPONT, B. A., B. S.,
CHARLES S. DENISON, C. E., M. S.,
ALFRED HENNEQUIN, M. A.,
OTIS C. JOHNSON, B. A., PH. C.,
CHARLES N. JONES, B. A.,
JOHN J. MAPEL, M. A.,
SAMUEL T. DOUGLAS, PH. B., PH. C.,
ABRAM V. E. YOUNG, PH. B., PH. C.,
VICTOR C. VAUGHN, M. S.

STUDENTS.

CIVIL ENGINEERING.

RESIDENT GRADUATES.

Name.		Residence.
Frank P. Davis, M. S.,	*Agricultural College,*	Ann Arbor.
Albert S. Hovey, B. A.,	*Willoughby Col., Ohio,*	Mentor, Ohio.

SENIORS.

Name.	Residence.
De Witt Clinton Allen,	*Cattaraugus, N. Y.*
James Oscar Caldwell,	*South Salem, Ohio.*
Lewis Cass Donaldson,	*Ann Arbor.*
Joseph Ripley,	*Pontiac.*
John Dana Sanders,	*Livermore, Maine.*
John Martin Schaeberle,	*Ann Arbor.*
Jonathan C. Shepard,	*Marshalltown, Iowa.*
Lester Herbert Strawn,	*Ottawa, Ill.*

JUNIORS.

Name.	Residence.
Osmer Henry Aikine,	*Jackson.*
Branch H. Colby,	*Ann Arbor.*
Charles Alfred Marshall,	*Wilmington, Del.*
Edward Johnson Snover,	*Romeo.*
Alonzo J. Tullock,	*Rockford, Ill.*
James Edgar Turtle,	*Cheshire, Mass.*

SOPHOMORES.

Name.	Residence.
George Frank Allmendinger,	*Ann Arbor.*
Clarence Oliver Arey,	*Whitewater, Wis.*

Loraine Ashman,	*Three Springs, Pa.*
Dennis James Casey,	*Wilmington, Del.*
Edward Sweatt Davis,	*Waxahachie, Texas.*
James Dick Du Shane,	*Connellsville, Pa.*
George Lee Fisher,	*Pontiac.*
John Butler Johnson,	*Kokomo, Ind.*
Timothy Josenhans,	*York.*
William Augustus Otis,	*Ann Arbor.*
James Sanderson,	*Detroit.*
Ossian Cole Simonds,	*Grand Rapids.*
Frank Livingston Sizer,	*Ottawa, Ill.*
Hiram Everett Terry,	*Avon.*
Andrew Wenzell,	*Detroit.*

FRESHMEN.

Name.	Residence.
Theodore Melzo Bates,	*East Cleveland, Ohio.*
Joseph Allan Beaumont,	*Peru, Ind.*
John William Dorst,	*New Albany, Ind.*
James T. Francis,	*Camp Point, Ill.*
Cornelius Van Cleve Ganson,	*Ypsilanti.*
Isaac Channing Goff,	*Cleveland, Ohio.*
Charles Sumner Henning,	*Plano, Ill.*
Cicero Demerit Hill,	*Milwaukee, Wis.*
Jerry Whipple Jenks,	*Rock Falls.*
Brayton Daniel King,	*Ann Arbor.*
James Collins Munson,	*Connellsville, Pa.*
Fred Polhemus,	*Ann Arbor.*
Irving K. Pond,	*Ann Arbor.*
Bruce M. Rowley,	*Romeo.*
Frank Satterlee,	*Birmingham.*
Evert Van Pelt,	*Buffalo, N. Y.*
E. Fred Wood,	*Ann Arbor.*

SELECT COURSE.

Name.	Residence.
Louis Hyde Evans,	*Chicago, Ill.*

MINING ENGINEERING.

RESIDENT GRADUATE.

Name.	Residence.
Salem T. Chapin, B. S.,	*Grand Rapids.*

JUNIOR.

Name.	Residence.
George Hart Miner,	*Ann Arbor.*

SOPHOMORES.

Name.	Residence.
Henry Wick Judd,	*Flint.*
Frank Voorhees Luse,	*Louisville, Ky.*
Eugene George Mann,	*Ann Arbor.*
Thomas Henry Noble,	*Elk Rapids.*

FRESHMEN.

Name.	Residence.
Harry C. Clements,	*Ann Arbor.*
H. Thorp Morley,	*Marine City.*
William Nash,	*Ottawa, Ill.*
Henry Camp Post,	*Grand Rapids.*
John Charles Quintus,	*Grand Rapids.*
Lucien James Whitney,	*Bay City.*

SELECT COURSE.

Name.	Residence.
Edward James Bird,	*Bay View, Wis.*
Charles Nathan B. Hall,	*Ann Arbor.*
Fernando Harvey Lungren,	*Toledo, Ohio.*

ADVANCED ZÖOLOGY AND BOTANY.

Name.	Residence.
Mary Campbell Douglas,	*Grosse Isle.*
George G. Groff,	*Chester Valley, Pa.*
Ellen Cornelia Merriam,	*Rutland, Vt.*
Volney M. Spaulding, B. A.,	*Ann Arbor.*
Charles William Wooldridge,	*Ionia.*

ANALYTICAL CHEMISTRY.

Name.	Residence.
Nathan P. Collins, B. A.,	*Union City.*
Caroline Irene Hubbard, B. S.	*Kalamazoo.*
Absalom W. Jones, B. A.,	*Flat Rock, Ill.*

PHARMACY.

SECOND YEAR.

Name.	Residence.
William Burton Alderson,	*San Francisco, Cal.*
Samuel E. Allen,	*Sinclairville, New York.*
Joseph Henry Ames,	*Three Oaks.*
Lynn D. Arnold,	*Corry, Pa.*
Lyman F. Beach,	*Bay City.*
Francis Thomas Bower,	*Toledo, Ohio.*
James Neelands Buckham,	*Flint.*
Charles Silvers Burroughs,	*Clinton.*
Orrin Sandsford Churchill,	*Three Oaks.*
John Thaddeus Clark,	*Clinton.*
Jeremiah Coughlin,	*Hancock.*
Charles Wallace Llewellyn Dietrich,	*Grand Rapids.*
Charles Austin Dingley,	*Sinclairville, N. Y.*
Charles Hulbert Eddy,	*Lenox, Mass.*
Louis C. Fuller,	*Brighton.*
Morris Udeen Green,	*Jackson.*
Charles Grimwood,	*Akron, Ohio.*

George Gundrum,	*Ionia.*
William John Holloway,	*Adrian.*
Henry Fennell James,	*Dayton, Ohio.*
John Robbins Little,	*Portland, Maine.*
James Lynn,	*Wabash, Ind.*
Frank William Herbert Massey,	*Brownville, Ind.*
James William Morgan,	*Ypsilanti.*
Henry Betts Parsons,	*Saline.*
Joseph John Pierron,	*Beloit, Wis.*
Edward Judson Risser,	*Onarga, Ill.*
Herman Merton Roys, B. S.,	*Ann Arbor.*
William Clarence Sheffield,	*Napoleon, Ohio.*
Stewart Whedon Smith, B. A.,	*Ann Arbor.*
Thomas Martin Stewart,	*Newton, N. J.*
Catherine M. Watson,	*Ann Arbor.*
Walter John Whitlark,	*Ann Arbor.*

FIRST YEAR.

Name.	Residence.
James Lowell Anderson,	*Ann Arbor.*
Frank Eugene Andrews,	*Adrian.*
John Herbert Avery,	*Detroit.*
Eva A. Bliss,	*Ann Arbor.*
Gleason Fillmore Dixon,	*Ann Arbor.*
John McCoy Eaton,	*Fairview, Pa.*
William John Freeman, Jr.	*Sacramento, Cal.*
Julius Garst,	*Champaign, Ill.*
William Howard Gates,	*Clinton Junction, Wis.*
Will Frank Griffith,	*Howell.*
Albert A. Hallock,	*Ann Arbor.*
Terry John Hallock,	*Ann Arbor.*
Bagley A. Harris,	*Pontiac.*
David Preston Hart,	*Akron, Ohio.*
Otho S. Hart,	*Adrian.*
Will Andrus Hasbrouck,	*Battle Creek.*
Theodore Hauck,	*Vicksburg, Pa.*
Frank Jackson Hubbard,	*Galesburg.*
Kent P. Humiston,	*Morenci.*
John Sleeper Johnson,	*Fentonville.*
Joseph John Johnston,	*Westfield, N. Y.*
Abram Pitcher Kerley,	*Upper Red Hook, N. Y.*
David Kirk,	*Kirkton, Ontario.*
Victor Knapp,	*Booneville, Ind.*

William Myron Lee,	*Benton Harbor.*
William H. D. Lewis,	*Chicago, Ill.*
Arthur Stephen Lobb,	*Monroe.*
William Lester Long,	*New Haven, Ohio.*
Anning Christian Lueder,	*White Pigeon.*
Theodore Miller,	*Camden.*
Patrick Eugene Nagle,	*Meeme, Wis.*
Stanley Eli Parkill,	*Owosso.*
Mary Elizabeth Post,	*Rochester, N. Y.*
Elwood Morris Reed,	*New Richmond, Ohio.*
Harry Gray Sherman,	*Kent, Ohio.*
John Austin Smith,	*Akron, Ohio.*
Jason Hungerford Smith,	*Richville, N. Y.*
Clarence George Stone,	*Detroit.*
Frank Eugene Sweetzer,	*Port Huron.*
Joseph Warren Tompkins,	*Red Hook, N. Y.*
John Gilbert Wastell,	*Port Huron.*
John Chris. Wiesinger,	*Adrian.*
Clinton Edwin Worden,	*Ann Arbor.*
Hugh Sumner Wyman,	*Blissfield.*
Arthur Lansing Young,	*Ann Arbor.*
William Youngs,	*Union Grove, Wis.*

DEPARTMENT

OF

MEDICINE AND SURGERY.

I. THE LECTURE COURSE.

The 27th annual course of lectures will commence on Monday, October 2, 1875, and will continue until the last Wednesday in March, 1876, with a recess during the holidays. Four lectures are delivered daily. Previous to each lecture students are examined, in accordance with a by-law of the Board of Regents, on the subjects of the preceding lectures. Clinics are held every Wednesday and Saturday for both medical and surgical cases, at which time examinations are made, prescriptions given and surgical operations performed, gratuitously to patients, in the presence of the class.

II. TERMS OF ADMISSION.

Every candidate for admission to the Medical Department must be eighteen years of age, and must present to the Faculty satisfactory evidence of good moral character. Unless already a matriculant of the University or a graduate of some respectable college, academy or high school, every candidate shall be examined as to his previous education and his fitness for entering upon and appreciating the technical study of medicine. The diploma or certificate of graduation from such institutions must be presented to the Dean of the Faculty by the candidate in order to secure exemption from the examination, which will be in writing and will cover the ordinary branches of an English education. This examination is not yet so exacting in its demands as we hope to be able to make it before long, but it is intended to test the student's acquaintance with the fundamental branches of an English education and his general intelligence and capacity to appreciate and profit by professional instruction.

Examinations will be held at 2 P. M. on Friday and Saturday, September 29 and 30, 1876. Candidates are required to present themselves on one of these days, as they are expected to be in attendance upon the first day of the term, at which time the regular course of instruction will commence. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse except of an urgent character will be accepted for failure to appear at the first examination. Certificates of attendance are given for the actual period of attendance only.

Before admission to examination every student is required to present to the Dean of the Faculty the Steward's receipt for the payment of the matriculation fee and annual dues. It will therefore be necessary for the candidate to apply first to the Steward at his office in the University Hall, register his name as a student in the department of medicine and surgery, and pay his fees. In case of rejection the moneys paid preliminary to examination will be refunded by the Steward.

III. ADMISSION OF WOMEN.

Recognizing the equality of rights of both sexes to the highest educational advantages, the Board of Regents, a few years since, made provision for the medical education of women, and they are now admitted to this as to all departments of the University on the same conditions that are required of the men. It is proper to state, however, in answer to the numerous inquiries which are made on this point, that the course of instruction for women, though equal in all respects to that provided for the men, is given separately, the two classes not being brought together in the lecture rooms except in the department of general chemistry. Ample provision has been made for the women's classes in the way of lecture rooms, dissecting rooms, etc.

IV. CONDITIONS OF GRADUATION.

Each candidate proposing to graduate at the close of his second course, must announce his intention at the beginning of that course, in order to receive those repeated examinations necessary to attest his qualifications.

To be admitted to the degree of Doctor of Medicine, the student must exhibit evidence of having pursued the study of medicine and surgery for the term of three years with some respectable practitioner of medicine (including lecture terms); must have attended two full courses of didactic instruction, the last of which must have been in the College of Medicine and Surgery in the University of Michigan, and the other in this or some other reputable medical institution; must have been engaged in the study of Practical Anatomy and Practical Chemistry; must be twenty one years of age; must have submitted to the Faculty a thesis, composed and written by himself, on some medical topic, and have passed an examination, at the close of the term, satisfactory to the Faculty. He is also required during the course to submit to written examinations by each Professor, on some subject pertaining to his department, in order to test further his knowledge of such subjects, and his ability to express himself correctly in writing. The final thesis may be written in English, German, French or Latin, and, if required, must be defended before the Faculty. The theses of successful candidates are to be preserved among the archives of the college. The theses of rejected applicants are returned.

V. EXTENDED COURSES.

The curriculum of medical studies, ever enlarging with the advancement of science, has become so much extended that the time usually spent in American medical colleges, always too short, is now entirely inadequate to that full, thorough and repeated presentation of the subjects required in a proper medical education. Although from the origin of this department its courses of instruction have been longer than those of other medical schools in this country, yet the time demanded is not sufficient for accomplishing for the students all that is desired; and though the authorities of the University do not require any extension of the time of attendance, yet the Faculty earnestly advise that students enter the college early in their course of study and remain in attendance for *three* terms instead of two, as is so generally the custom.

They would further advise that those who may take this more extended and thorough course devote the first year chiefly to the elementary branches of Chemistry, Anatomy, Physiology and Materia Medica; the second year to carefully reviewing these subjects in connection with the thorough study of the more advanced branches of Pathology and the Practice of Medicine, of Surgery, of Midwifery and the diseases of women and children, and of the specialty of diseases of the eye and ear; while the third year should be chiefly devoted to a careful review of these latter branches, and to clinical study in the hospital.

In order to encourage students to take the extended course, the authorities have decided that those who elect it, may pass their full examinations in Anatomy, Physiology, Chemistry and Materia Medica at the end of the second college year, and receive a certificate to that effect, without reference to their time of study, and may thus be left free to give more thorough attention to the practical and more special branches the third year, and to prepare for the final examination upon them, admitting to the degree of Doctor of Medicine.

Students will find additional inducements to take the three years' course, in the facilities which will be afforded them during the third year to study in sections under the instruction of the professor, the details of diagnosis and treatment at the bed-side, in the new State hospital, during the time out of the regular lecture hours, which must necessarily be spent by first and second course students in the chemical, anatomical and physiological laboratories.

Attendance during the first year upon the lectures on the advanced branches of Practice of Medicine, Surgery and Obstetrics, and during the third year in the primary branches of Chemistry, Anatomy, Physiology and Materia Medica, will be optional with students taking the three years' course—attendance upon two courses only in each of the branches being required.

During the three months succeeding the regular lecture term, the chemical laboratory is open and all the means of instruction are available, as at any time; and facilities for pursuing other special studies, such as Botany, Zoölogy, etc., are afforded those interested in these subjects. The Faculty strongly advise that as much of the practical work in the laboratories as possible be done at this time, when fewer subjects are pressed upon the attention of students. Thus a nine months' course, without additional fees, is offered to all.

The advantages of combining a graded or successive, with a repeating course of instruction, extended over so long a period and at so little expense, are too obvious to require further consideration.

To encourage a higher grade of preliminary acquirements, an allowance of six months from the term of study is made in favor of graduates of the College of Arts and Science in the University, and of other respectable literary colleges, in evidence of which a diploma must be exhibited.

Also an allowance of twelve months is made for graduates of the Department of Pharmacy in this University.

The week preceding Commencement will be devoted to the examination of candidates.

VI. FACILITIES FOR INSTRUCTION.

The department of Medicine and Surgery is abundantly supplied with plates, photographs, models, specimens, preparations, apparatus, and instruments, for the purpose of illustrating the different studies embraced in the course. The apparatus in the department of chemistry and chemical physics, is probably unsurpassed, if indeed it be equaled, by that of any medical college in the country. Additions are made from time to time to these collections by special appropriations from the Board of Regents so that the Faculty are enabled to adopt every new method of illustration and to exhibit to the classes each year all important improvements in the way of instruments and apparatus that are employed in the practice of medicine and surgery, and to show their application.

The museums of Professors Ford and Sager, embracing several thousand specimens, which are the result of many years' labor in the collection and preparation of materials intended to aid directly in teaching have now become the property of the University, and are used in the daily work of the class rooms. These museums contain a valuable collection of bones, illustrating healthy as well as diseased conditions, and showing the various changes that occur from infancy to old age, and the processes of first and second dentition ; dissections general and partial of the vascular, nervous and muscular systems, both normal and abnormal ; models in wax, papier maché and plaster of various portions of the body, illustrating morbid growths, skin diseases, etc. ; preparations in the comparative embryology, neurology and craniology of the vertebrata ; human embryology and anatomy and pathology of the diseases of women, etc. The collection of monstrosities, both single and double, of man and the lower animals is unusually full and valuable.

The department of the museum illustrative of Materia Medica consists of a very complete suit of crude organic medicinal substances, embracing between five and six hundred specimens, imported from Paris, put up in beautiful glass-covered half gallon jars of uniform appearance, finely displayed and arranged according to their order in natural history; beside about one thousand other specimens of simple mineral and vegetable substances, and pharmaceutical and officinal preparations, active principles, etc., arranged in groups convenient for study. Medical botany is further illustrated by between one and two hundred large and finely colored plates.

The above collections, to which additions are made yearly, are catalogued and arranged in cases. The museum thus affords a secure depository for objects of interest and value, and it is to be hoped that the alumni and other friends of the University will continue their generous donations of such materials.

Besides these aids in study the students in medicine are allowed free access to the general botanical, zoölogical and geological cabinets of the University, which are estimated to contain 150,000 specimens. The scientific and philosophical lectures collateral to medicine, which are given in the collegiate department, are also open to our students. The general library contains about 23,000 volumes, of which some 1,600 are medical works. A complete catalogue of the library, arranged both by the names of authors and by subjects, is accessible to all students. The leading medical periodicals of this country and of Europe are taken and kept on file in the library.

Arrangements have been made by which an ample supply of material for the purpose of practical anatomy has been secured, and special attention is given to this important study. Material for this department can be furnished as abundantly and at as low rates as at other institutions of the kind.

The chemical laboratory is one of the largest and best equipped in the United States, and every student before he can receive the degree of M. D., is required to take a course of practical medical chemistry, which comprises, according to the expertness of the student, from ten to sixteen weeks of laboratory work. The only expense incurred in the laboratory is the actual cost of the chemicals and apparatus consumed by the student in his manipulations. Experience has shown that the average is one dollar and ten cents per week for all laboratory courses. A full description of the Laboratory and laboratory work may be found on pages 75–78.

Recognizing the importance of combining clinical with didactic instruction, College Clinics have for years past been conducted on Wednesdays and Saturdays during the session, for Medical, Surgical and Opthalmic patients. These are examined, prescribed for, and when necessary, operated upon before the class; and large numbers, especially of chronic cases, from this and neighboring States, have availed themselves of these privileges. Besides this, the regents, some years since, set apart one of the University buildings for hospital purposes, where considerable numbers of patients have been treated. Still our hospital facilities have hitherto been wholly inadequate; but at the last session of the Legislature of this State, a generous grant of money (to which a large amount has been added by the city of Ann Arbor) was made for the purpose of erecting and furnishing a new hospital. Two pavilions attached to the older building, (which will hereafter be used exclusively for the executive department of the hospital,) have been erected. These pavilions are each one hundred and fifteen feet long by twenty-eight feet wide, with seventeen feet ceilings, and are amply provided with every appointment of a first-class hospital—baths, water closets, heating and ventilating apparatus, lounging and reception rooms for patients, etc. A few private rooms have been provided for such patients as may be willing to pay an increased price for better accomodations than are furnished in the general wards. Patients are required to pay only the cost of board and medicines, the medical and surgical attendance being gratuitous. The buildings will hereafter be kept ready for occupation, and it is believed that the supply of clinical material will be as great as can be fully utilized in illustrating the didactic course. Patients will be received from any State, the only restriction being that no contagious diseases are admitted.

A special course of instruction in Physical Diagnosis is given by the Professor of the Practice of Medicine, for which a fee of five dollars extra is required. Attendance on this course is optional with the students.

VII. FEES AND EXPENSES.

The fees, which must be paid in advance, are as follows:

MATRICULATION FEE.—Residents of Michigan, $10; non-residents, $25.

ANNUAL DUES.—Residents of Michigan, $15; non-residents, $20.

GRADUATION FEE.—For all alike, $5.

For further particulars concerning expenses, see page 22.

VIII. TEXT AND REFERENCE BOOKS.

ANATOMY.—Gray, Wilson, Leidy, Peaslee, Stricker.

PHYSIOLOGY.—Küss, Kirkes, Dalton, Marshall; *For Reference*—Flint, Carpenter, Todd and Bowman, Sanderson's Handbook for the Physiological Laboratory.

CHEMISTRY AND PHARMACY.—Miller's Chemical Physics, Bloxam's Chemistry, Miller's Inorganic, Douglas and Prescott's Analysis, Harley on the Urine, Wormley's Micro-chemistry of Poisons.

MATERIA MEDICA AND THERAPEUTICS.—H. C. Wood, Jr., Stille, Waring, Ringer, Biddle. *Special Subjects*—Headland on the Action of Medicines, Anstie on Stimulants and Narcotics, Harley on the Old Vegetable Neurotics.

PATHOLOGY AND PATHOLOGICAL ANATOMY.—Green, Rindfleisch, Billroth, Paget, Williams's Principles. *For Reference*—Rokitansky and Virchow.

OBSTETRICS.—Meadow's, Leishman, Tyler Smith, Byford, Milne, Schrœder, Cazeaux, Hodge. *Special Subjects*—Tanner on Pregnancy, Barnes on Obstetric Operations, Elliot's Obstetric Clinic, Barker on the Puerperal Diseases.

DISEASES OF WOMEN.—Thomas, Byford, Hewitt, West, Barnes, Hodge. *Special Subjects*—Tilt, Uterine Therapeutics; Klob, Pathological Anatomy of the Female Sexual Organs; Peaslea on Ovariotomy; Sims on Uterine Surgery; Emmet on Vesico-Vaginal Fistula.

DISEASES OF CHILDREN.—J. L. Smith, Vogel, Tanner, Meigs and Pepper. *Special Subjects*—Eustace Smith on the Wasting Diseases of Infancy and Childhood, Combe on the Management of Infancy, Routh on Infant Feeding, Holmes or Guersant on the Surgical Diseases of Children.

PRACTICE OF MEDICINE.—Aitkin edited by Clymer, Niemeyer, Roberts, Flint, Watson, Tanner, Wood. *Special Subjects*—Walshe or Flint on the Lungs, Williams on Pulmonary Consumption, Flint or Stokes on the Heart, Roberts or Beale on Urinary Diseases, Budd on the Stomach, Chambers on the Indigestions, Murchison on Fevers, Murchison on the Liver, Da Costa on Medical Diagnosis, Loomis on Physical Diagnosis. *For Reference*—Reynold's System of Medicine, and Trousseau's Clinical Lectures.

SURGERY.—Syme edited by Maclean, Erichsen, Hamilton, Druitt. *Special Subjects*—Billroth on Surgical Pathology, Hamilton on Fractures and Dislocations, Bumstead on Venereal Diseases, Sayre on Club Foot, Sir Henry Thompson or Gouley on Genito-Urinary Diseases and Surgery, Van Buren and Keyes on the Genito-Urinary Organs. *In Minor Surgery and Surgical Appliances*—Bell, Le Gros Clarke, Anandale, Wales, Sargent. *For Reference*—Gross's System of Surgery, and Holme's System of Surgery.

OPHTHALMOLOGY AND OTOLOGY.—*On the Eye*—Sœlberg Wells, Stellwag, Metz. *On the Ear*—Roosa or Toynbee with Hinton's Supplement.

The student who is commencing a course of reading, without an instructor, is recommended to devote the most of his time for the first year to the elementary branches, Anatomy, Physiology and Chemistry, both general and medical. Then advancing to the other studies select one of the first mentioned text-books in each department, passing to the "*special subjects*" only when near the completion of the course, or as he may desire for particular reasons, to become more fully informed on such subjects. The books mentioned are standard authorities, and will form a good nucleus for a medical library.

IX. ASSIGNMENT OF SEATS.

Students on arriving in Ann Arbor can obtain necessary information in regard to rooms, board, etc., by calling at the Steward's office. Seats in the lecture rooms are assigned by selection to students in the order of registration on the Steward's books, and each student is expected to occupy during the session such seat as he may select. The graduating class, by courtesy, are allowed the privilege of the seats nearest the operating table and lecture desk. Letters of inquiry may be addressed to the "Dean of Medical Faculty," Ann Arbor, Michigan.

THE FACULTY

OF THE DEPARTMENT OF

MEDICINE AND SURGERY.

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STUDENTS.

Name.	Residence.	Preceptor.
Charles Burton Allen,	*Uniontown, Pa.,*	J. B. Earing.
Lottie Allen,	*Ann Arbor,*	D. C. Hartley.
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John Ebbin Barbour,	*Lapeer City,*	L. M. Arnold.
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Clarence Perley Battles,	*Girard, Pa.,*	Ely & Taylor.
Platt Ellsworth Beach,	*Seville, Ohio,*	A. P. Beach.
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Charles Ephraim Begel,	*Hanover,*	J. A. Wilson.
Edward Southward Bell,	*Zanesville, Ohio,*	A. E. Bell.
Dwight Warren Berdan,	*Saline,*	D. Hall.
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Don Alvarado Bisbee,	*Rochester, Vt.,*	A. Richmond.
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George Alson Brundage,	*Factoryville, Pa.*,	A. T. Brundage.
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John F. Campbell,	*Belmont, Ontario.*	J. B. Campbell.
John Oscar Campbell,	*Oregon, Ill.*,	Sutherland & Leviner.
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Charles S. Chamberlin,	*Toledo, Ohio.*	J. A. Duncan.
H. D. Chamberlin, M. A., Oberlin College.	*Shelby, Ohio*,	Bricker & Huss.
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Wright J. Chittock,	*Jackson*,	G. Chittock.
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Mary Elizabeth Clark,	*Lapeer*,	J. S. Barclay.
Almond Russell Collar,	*Auburn, Ind.*,	J. B. Caseteer.
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Amanda Conklin,	*Macedon C'ter, N. Y.*	Warner & Kingsley.
John Edward Conlan,	*Henrietta*,	J. B. Townsend.
Richard Cosens,	*Rockwood, Ontario*,	R. C. Curry.
John Thomas Colton,	*Arkona, Ontario*,	Dr. Dawes.
Fred Warren Cram,	*Stillwater, Minn.*,	P. H. Millard.
Andrew M. Crawford, B. A., Olivet College.	*Olivet*,	H. R. Guthrie.
Charles G. Cruickshank,	*Iosco*,	A. S. Austin.
John Franklin Currey,	*Flint*,	B. H. Currey.

James Edward Davison,	*Ann Arbor*,	Maclean & Frothingham.
Alfred Desjardens,	*Marquette*,	J. McQuillen.
Clifford L. DeVinney,	*Newark, N. J.*,	Solon Briggs.
Amasa John Dickinson,	*Shellsburg, Iowa*,	W. S. Boyd.
William Dodson,	*St. Thomas, Ont.*,	Meday & McDamaid.
Thomas Dolan,	*Northfield*,	Dr. Kapp.
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John H. Dumon,	*Evert*,	D. L. Dumon.
Moors Hudfred Eades,	*Bethany, Mo.*,	J. Walker.
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George Cascade Fann,	*Chelsea*,	F. Gates.
Alfred A. J. Farewell,	*Ashawa, Ontario*,	Dr. McGill.
Elizabeth A. Follansbee,	*San Francisco, Cal.*,	Michell & Brown.
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Thomas Joseph Forham,	*Menominee*,	Faculty.
Mary Jane Forsyth,	*Ann Arbor*,	N. K. Moxley.
Orson S. Fox,	*Owego, N. Y.*,	G. W. Beach.
Louis Frederick Franks,	*Milwaukee, Wis.*,	Prof. Maskan.
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George Whitfield Furey,	*Constantine*,	Dr. Thomas.
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Carlton Graves,	*Trenton, N. Y.*,	E. W. Raynor.
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Henry H. Hahn, B. A.,	*Leetonia, Ohio*,	Faculty.

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William McHarsha, B. S., Nat. Normal School.	*Harshaville, Ohio,*	Faculty.
Henry M. Haskell, B. A.,	*Marshall,*	W. B. Church.
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D. Claude Hawxhurst,	*Battle Creek,*	Faculty.
John Walker Hawxhurst.	*Jackson,*	Faculty.
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Mary S. Hoagland,	*Union Springs, N. Y.,*	Tho. Waddell.
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Frank Hooner,	*Belleville,*	W. H. Martin.
I. Walker Houston,	*Marshall,*	J. H. Montgomery.
James Jeff. Howard,	*Grand Rapids,*	R. Broughton.
Leonora A. Howard,	*Grand Rapids,*	Faculty.
Frank Hoxie,	*Auburn, N. Y.,*	B. K. Hoxie.
Oliver Nixon Huff,	*New Garden, Ind.,*	J. S. Harris.
Thomas Alexander Hull,	*Belmont, Ont.,*	J. B. Campbell.
Charles Carroll Hyde,	*Plainwell,*	L. A. Daniels.
Merrill James Hyde,	*Plainwell,*	L. A. Daniels.
Aaron Rood Ingram,	*Fentonville,*	W. Harper.
John Smith Ingram,	*Fentonville,*	Henry Hull.
George Henry Jones,	*Le Roy, N. Y.,*	J. F. Cleveland.
Richard Owen Jones,	*Cambria, Wis.,*	Dr. Blanchard.
William Henry Judson,	*Mendon, Mass.,*	A. C. & J. H. Fay.
Christian F. Kapp, Jr.,	*Ann Arbor,*	J. Kapp.
William Henry Karns,	*Ligonier, Pa.,*	J. F. Ambrose.
Charles W. Keefer,	*E. Greenwich, N. Y.,*	O. W. Young.
Titus Dixon Keillor,	*Strathroy, Ontario,*	Faculty.
Michael H. Kerwin,	*Menasha, Wis.,*	A. K. Patten.
George Mars King,	*Sheboygan F'lls, N. Y,*	B. G. Wilder.
George W. King,	*Ithaca, N. Y.,*	Faculty.
Lorison J. King,	*Union City, Pa.,*	G. R. Greenlee.
Mabel R. King,	*South Hadley, Mass.,*	Faculty.
Robert John Kingston,	*Newburgh, N. Y.,*	J. G. Birch.
Fred Eugene Knapp,	*Montrose, Pa.,*	G. W. Beach.
Henry Kremers,	*Zeeland,*	Dr. Vandenberg.

Samuel Allen Lacock, B.S. Bethany College.	*Washington, Pa.*,	Faculty.
Frank Newton Latimer,	*Muskegon*,	J. M. Cook.
Charles Laughlin,	*Paris, Ill.*,	Faculty.
John Joseph Lawless,	*Adrian*,	J. T. Lawless.
John Lee,	*Ann Arbor*,	E. Hall.
Inez A. Legg,	*Gray, N. Y.*,	H. S. Streeter.
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John Augustus Wright,	*Toledo, Ohio*,	D. B. Sturgeon.
Elisha W. Young,	*South Sodus, N. Y.*,	P. S. Rose.
David Zimmerman,	*Belleville*,	D. Forbes.

DEPARTMENT OF LAW.

I. DEPARTMENT OF LAW.

In this department it has been the endeavor, alike of the Regents and of the Faculty, to make the instruction imparted and the advantages afforded equal to any attainable elsewhere in the country; and in this they believe they have been entirely successful. They intend to spare no effort on their part to render it deserving in the future of the prosperity it has hitherto enjoyed. A spacious building has been erected for its accommodation, with ample debating and society rooms, and in every respect the conveniences of the department are unsurpassed.

II. TERMS OF ADMISSION.

The requisites for admission are, that the candidate shall be eighteen years of age, and be furnished with a certificate giving satisfactory evidence of good moral character. No previous course of reading is required, and the course of instruction for the two terms has been carefully arranged, with a view to enable students to enter profitably at any stage of their studies, and at either term.

III. COURSE OF INSTRUCTION.

The design of the department is to give a course of instruction that shall fit students for practice in any part of the country. The course will embrace the several branches of Constitutional, International, Maritime, Commercial and Criminal Law, Medical Jurisprudence, and the Jurisprudence of the United States; and will include such instruction in Common Law and Equity Pleading, Evidence and Practice, as will lay a substantial foundation for practice in all departments of law.

The course will be continued through a period of two years, with one term in each year, commencing this year on the second day of

October, and continuing until the Law Commencement in the last week of March ensuing. Ten lectures and examinations will be held each week during the term. For one year they embrace the following subjects:

The Origin and History of Equity Jurisprudence.

The General Heads of Equity Procedure and Nature and Forms of Equitable Remedies.

Criminal Law;

The Laws of Evidence, and their application to Legal Proceedings;

Contracts;

Title to Personal Property, by Gift, Inheritance, Sale, Mortgage, Assignment, and by Operations of Law; Bailments;

Bills of Exchange and Promissory Notes, and Commercial Law generally;

Estates in Real Property;

Easements;

Title to Real Property;

The Domestic Relations.

For the year after, the following subjects:

Some Special Heads of Evidence, and Equity Jurisprudence:

Equity Pleading and Practice; Jurisprudence of the United States;

Shipping and Admiralty;

Agency; the Law of Corporations; Common Law Pleading and Practice; Constitutional Law; Partnership; Uses and Trusts; Wills, their Execution, Revocation, and Construction.

The Administration and Distribution of Estates of Deceased Persons.

Moot Courts are held at least once a week during the term, for the argument of cases previously given out by the Professors to students designated to discuss them. They will be presided over by the Professor lecturing for the day, who, at the conclusion, will review the arguments and give his decision upon the points involved. Club Courts will also be organized among the students, to be arranged and conducted by themselves, with such assistance from the members of the Faculty as may be desired. These Courts, thus far, have been found alike interesting and useful to those who have participated in them.

IV. LIBRARY.

A well selected and very useful Law Library is open for consultation by students at all reasonable hours. The rooms of the Professors adjoin the Library, and they will be ready all times to furnish to students such aid in their studies and investigations as they may desire. The General Library of the University is also at all times open to the students of this department. The Law Library has been considerably increased within a few years by a donation, by the Hon. RICHARD FLETCHER, late one of the Justices of the Supreme Court of Massachusetts, of a considerable portion of his own library of law books.

V. DEGREES.

The Degree of Bachelor of Laws will be conferred upon such students as shall pursue the full course of two years in this department, and pass an approved examination. It will also be conferred upon those who, having attended another Law School for a period equal to one year of our courts, or practised law for one term under a license from the highest court of general jurisdiction in any State, shall also pursue one year's course in this department, and pass a like examination. In Michigan, the degree entitles the resident graduate to an immediate license to practise in all of the courts of the State.

Candidates for degrees will be required to prepare and deposit with the Faculty, at least one month before graduation, a dissertation not less than forty folios in length, on some legal subject selected by himself. These theses will be filed and preserved in the Library.

VI. BOOKS.

While several copies of each of the leading text-books will be found in the Library, it is exceedingly desirable that students should supply themselves with such as they may need at their rooms. The Professors will lend them aid in making proper selections, and no loss will be incurred, as the books will be found essential in subsequent practice. Students will find that it will greatly facilitate their studies to have them at hand at all times.

VII. GENERAL REMARKS.

The Faculty are frequently applied to by letter for advice upon the question whether it is desirable to enter upon the study of law, and acquire some general knowledge of the principles, before admission to the department. It is somewhat difficult to lay down general rules that can be advantageously applied in all cases, but the Faculty are of the opinion that, for the first year at least, more positive benefit is received from the lectures, and more positive advancement in the law made, by students who have read before coming, at least the Commentaries of Blackstone, than by those who are beginners here. But the Faculty are aware of the difficulty experienced by the student in giving proper direction to his reading and investigations at the beginning; and they do not, therefore, make it a condition of admission that there shall be any prior reading in the law whatever. The want of such prior reading will, doubtless, in many cases, be fully compensated in the aid the beginner may receive here in the outset. It is not often that the student receives the needed assistance, except in Law Schools. The active practitioner, engrossed with the cares of business, cannot—or, at least, as proved by experience, does not—furnish the students who place themselves in his charge, the attention and assistance essential to give a correct direction to their reading, and to teach them to apply it usefully and aptly in their subsequent professional life. The reading of a student in a law office is practically the study of the law by himself, and without assistance; and he neither acquires that familiarity with books and that facility of reference which it will be the aim of this department to assist in acquiring, nor learns anything of the practical applications of legal principles, beyond what he may pick up from observation of the practice of his preceptor. The effort here will be to make, not *theoretical* merely, but *practical* lawyers; not to teach principles merely, but how to apply them. To this end, the Moot Court will be made the forum for the discussion of such practical questions as must frequently arise in a professional career at the bar; and the attention of the Faculty will be directed not less to the application of the points discussed to actual cases, than to the elucidation of the legal questions. An opportunity will be afforded all the senior students to participate in this court, and they will at all times have such assistance in their Club Courts as they find themselves in need of.

While thus sedulously endeavoring to impart legal knowledge, the fact will not be lost sight of, that a high moral standard is a most important requisite to a successful and honorable legal career; and no pains will be spared in impressing this fact upon students, and in inculcating a high tone of professional ethics and action.

Those who desire any further information concerning the Law Department, may make their inquiries of Hon. T. M COOLEY, Dean of the Law Faculty.

THE FACULTY

OF THE

DEPARTMENT OF LAW.

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CHARLES I. WALKER, LL. D.,
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Charles Donnelly,	*Chicago, Ill.*
James Donnelly,	*Bay City.*
Melville B. Cox Ebright,	*Wooster, Ohio.*
Robert Palmer Elliott,	*Henderson, Ky.*
James Clarence Ellis,	*Fayette, Miss.*
Arnold William Eschenburg,	*Chicago, Ill.*
William Henry Fairchild,	*Fairfield, Vt.*
Frank Levi Fales,	*Charlotte.*
Edwin J. Ferdon, C. E.,	*Ann Arbor.*
Fred H. Fife,	*Deerfield.*
Albert Edward Fleming,	*Buckley, Ill.*
Edgar Fleming,	*Lexington, Mo.*
Michael J. Forhan, M. A., St. Mary's College.	*Ann Arbor.*
S. Olin Foster,	*Turin, N. Y.*
Lucius William Frazer,	*Detroit.*
Isaac Andrew Gilbert,	*Bay City.*
William Dennis Gilbert, B. A., Kan. Ag. College.	*Valley Falls, Kansas.*
Charles Pierce Gilchrist, B. A.,	*Ann Arbor.*
Daniel Virgil Gore,	*Carlisle, Ky.*
Edward Graser,	*Union City, Pa.*
Franklin Pierce Green,	*Palermo, Ill.*
Darwin C. Griffin,	*Ypsilanti.*
Gerald Griffin,	*Ann Arbor.*
Hugh DeLos Grigsby,	*Pittsfield, Ill.*
Hiram C. Groat,	*Memphis.*
Matthew Franklin Guinon,	*Scio.*
Frank D. Hale,	*Lunenbury, Vt.*
William Irving Hamilton,	*Ross.*
John E. Hannon,	*Albany, Oregon.*
William Henry Harris,	*Battle Creek.*
Whitman Tanner Hines,	*Woodstock, Ill.*
William T. Hodson,	*Apple River, Ill.*
F. Pierce Hopkins,	*Owattouna, Minn.*
Charles Ripley Hopson,	*Elgin, Ill.*
Wallace G. Jones,	*Holly.*
W. Scott Judy,	*Tallula, Ill.*
Creamer Hickman Lafferty,	*Mechanicsburg, Ohio.*
Frank Larzalere,	*Tekonsha.*
Edward Leroy Lemert,	*Perry Town, Ohio.*

Myron Chatham Lingle,	*Lock Haven, Pa.*
Thomas Francis Maloy,	*Ida.*
Medary Dale Mann,	*Westerville, Ohio.*
Nathan Abijah Mann,	*Westerville, Ohio.*
Reuben Henry Markham, B. A., Oberlin College.	*Albany, Oregon.*
Hattie Mason,	*Ann Arbor.*
Don A. Matthews, B. A.,	*Ypsilanti.*
M. Foy McDonald,	*Brockport, N. Y.*
Richard Lewis McDougall,	*Warsaw, Ill.*
Joseph James McKee,	*Lebanon, Ill.*
Charles Collins McKinney,	*Cleveland, Ohio.*
E. William L. McLaughlin,	*Charlotte.*
John Andrew McMahon,	*Marquette.*
James McNaughton,	*Akron, Ohio.*
John Michell,	*Portland, Oregon.*
Will E. Miller,	*Hamilton, Ohio.*
William Emery Monks,	*Winchester, Ind.*
Edgar Jay Moore,	*Mt. Joy, Pa.*
William Campbell Moore,	*Port Sanilac.*
Thomas Ephraim Morey,	*Sandusky, Ohio.*
Samuel J. Nelson,	*Rochester, Minn.*
Henry Ohrns, Jr.,	*Mt. Clemens.*
George Oliver, Jr.,	*Allegan.*
Louis George Partridge,	*San Francisco, Cal.*
Charles Wallace Perry,	*Davison Station.*
Charles Leonidas Phelps,	*Oregon, Ill.*
Fred Bryan Phillips,	*Fredericktown, Mo.*
Hermann Pistorius,	*Saginaw City.*
Robert Pollard,	*Delphi, Ind.*
Elmer Blake Potter,	*Grinnell, Iowa.*
Alfred Fremont Potts,	*Indianapolis, Ind.*
Frank Augustus Reid,	*Bowling Green, Ohio.*
Frank George Reynolds,	*Battle Creek.*
Claudius Mattock Rivers,	*Stillwater, Minn.*
John J. Robbins,	*Economy, Ind.*
James J. Rogers,	*Cedar Rapids, Ind.*
Claiborne Schuyler Rohrer,	*St. Paul, Minn.*
Reuben Roof,	*Dearborn.*
George Wallace Salmans,	*Alvin, Ill.*
Lewis Scribner,	*Blissfield.*
William Jay Sessions, B. S., Ag. College.	*Matherton.*
Charles Wesley Seward,	*Perrytown, Ohio.*
Theodore Stanfield Shaw, B. S., Pacific University.	*San Jose, Cal.*

John Evans Simonson, B. S., Ag. College.	*Birmingham.*
Frank Harford Smiley,	*Columbus.*
Eugene O. Spare,	*Galena, Ill.*
Seymour Chapman Spencer,	*East Saginaw.*
Edward Conrad Springer,	*Edwardsville, Ill.*
George Milton Sprout,	*Pinckney.*
Ashbel Greene Steiner,	*Grand Rapids.*
Lewis Ervin Stetler,	*Bellevue, Ohio.*
Robert W. Stewart,	*Dubuque, Iowa.*
Louis Frederick Stifel,	*Wheeling, W. Va.*
Horace Greeley Stover,	*North Branch.*
Spencer Calvin Stough,	*Waterloo, Ind.*
Frank Hammond Sweet,	*Grand Rapids.*
Frank Taggart, B. A., University of Wooster.	*Wooster, Ohio.*
John Lafayette Talbott,	*Ann Arbor.*
Arthur Bruce Taylor,	*Salt Lake City, Utah.*
William B. Taylor,	*Wyandotte, Kansas.*
Louis Bruner Tuller,	*Columbus, Ohio.*
John Augustus Turner,	*Orangeville.*
Frank B. Tuttle,	*Oneida, N. Y.*
John Burgess Utt,	*Platteville, Wis.*
Samuel Waldo Vandivert,	*Bethany, Mo.*
Willis Ephraim Walker, B. A., Yale College.	*Detroit.*
Frank Wellington Waring,	*Battle Creek.*
Charles Spencer Warn,	*Capac.*
William Watts,	*Goderich, Ontario.*
George William Weadock,	*Bay City.*
William Henry Wells, B. A.,	*Ann Arbor.*
F. Emery Wheaton,	*Wheaton, Ill.*
Ezra Wayne White,	*Springfield, Ill.*
Girden O. Williams,	*Williamstown.*
William B. Williams, B. A.,	*Lapeer.*
Ariel Newton Wilson,	*Ann Arbor.*
Arion E. Wilson,	*Shelocta, Pa.*
George Adolphus Wood,	*Springfield, Ill.*
Florentine Clark Woodworth,	*Plainfield.*
John W. Yerkes, B. A., Centre College.	*Danville, Ky.*
Bertrand Dealton York,	*Ann Arbor.*
Alfales Young,	*Salt Lake City, Utah.*
Frank E. Young,	*Ann Arbor.*

THE

HOMŒOPATHIC MEDICAL COLLEGE

I. THE LECTURE COURSE.

The second annual course of lectures will commence on Monday, October 2d, 1876, and will continue until the last Wednesday in March, 1877, with a recess during the holidays.

II. TERMS OF ADMISSION.

Every candidate for admission to the Homœopathic Medical College must be eighteen years of age, and must present to the Faculty satisfactory evidence of good moral character. Unless already a matriculant of this University, or a graduate of some respectable college, academy or high school, every candidate shall be examined as to his previous education and his fitness for entering upon and appreciating the technical study of medicine. The diploma or certificate of graduation from such institution must be presented to the Dean of the Faculty by the candidate, in order to secure exemption from this examination, *which will be in writing, and will cover the ordinary branches of an English education.*

Examinations will be held at 2 P. M. on Friday and Saturday, September 29 and 30, 1876. Candidates are required to present themselves on one of these days, as they are expected to be in attendance upon the first day of the term, at which time the regular course of instruction will commence. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse except of an urgent character will be accepted for failure to appear at the first examination. Certificates of attendance are given *for the actual period of attendance only.*

Before admission to examination, every student is required to present to the Dean of the Faculty the Steward's receipt for the payment of the annual dues. It will therefore be necessary for the candidate to apply *first* to the Steward, at his office in University Hall, register his name as a student in the Homœopathic Medical College, and pay his fees. In case of rejection the moneys paid preliminary to examination will be refunded by the Steward.

III. ADMISSION OF WOMEN.

Recognizing the equal right of both sexes to the higher educational advantages, the Board of Regents a few years ago made provision for the medical education of women, and they are now admitted to this, as to all of the departments of the University, on the same conditions that are required of men. It is proper to state, however, in answer to the numerous inquiries which are made on this point, that the course of instruction for women, though equal in all respects to that provided for the men, is given separately; the two classes not being brought together in the lecture rooms, except in the department of General Chemistry. Ample provision of lecture-rooms, dissecting-rooms, etc., has been made for the classes of women.

IV. FACILITIES FOR INSTRUCTION.

Students in this College will receive instruction in Materia Medica and Therapeutics from Prof. Jones, and in Theory and Practice of Medicine from Prof. Morgan. To gain instruction in General Chemistry, Anatomy, Organic and Applied Chemistry, Physiology, Ophthalmology, Otology and Practical Anatomy, Surgery, Obstetrics and Diseases of Women and Children, they will attend the lectures on those subjects in the "Department of Medicine and Surgery." While in attendance on such lectures they shall be entitled to all the privileges accorded to students in said department, and shall conform to all requirements of said department, so far as they apply to the branches which they pursue.

Four lectures are attended daily. Previous to each lecture students are examined, in accordance with a by-law of the Board of Regents, on the subjects of the preceding lectures.

Clinics will be held under the direction of the Professors of this College.

Liberal provision is made by the Board of Regents for illustrating the various branches of instruction by plates, preparations, specimens, and apparatus. The department of chemistry and chemical physics is probably unsurpassed, if indeed it is equalled, in the extent and thoroughness of its equipments, by that of any medical college in the country. The museums, containing several thousand specimens, comprise a valuable collection of bones, amply illustrating both physiological and pathological conditions of all ages, and showing the processes of dentition, of growth, and of decay in the osseous system, dried preparations, normal and abnormal, of the different tissues of the body, embracing muscles, blood-vessels. nerves, etc.; models and casts illustrating skin diseases, tumors and pathological changes in the various organs. In the sections devoted to comparative embryology and craniology, and in human embryology and the diseases of women, the collections are especially interesting. The specimens of monstrosities, both single and double, of man and the lower animals, are very numerous and instructive.

Arrangements have been made, by which an ample supply of *material* for the purpose of Practical Anatomy has been secured, and special attention will be devoted to rendering this important study as advantageous as possible to the student. Experience has shown that *material* can be purchased here abundantly, and at reasonable rates.

Free access is allowed the student to the general Botanical, Zoological and Geological cabinets of the University, which are estimated to contain about 150,000 specimens. If he desires and has leisure, he can also by permission attend the scientific and philosophical lectures of special interest to him, which are given in the literary department.

The General Library, which is open day and evening, except on Sundays, contains about 23,000 volumes, comprising a large number of medical works. A large number of the leading medical periodicals of Europe and America, in which the teachings of both schools are represented, are taken and kept on file in the University.

The Chemical Laboratory, which has been recently enlarged, contains 175 separate tables for students. It is provided with six excellent, sand, water and steam baths and drying ovens. The furnace room is furnished with all the apparatus for organic analysis. The Laboratory Library contains all the standard works and the leading

European and American periodicals on chemistry and the allied sciences. The Laboratory is, in short, one of the most thoroughly equipped, as it is probably the largest in the country.

Every candidate for the Degree of M. D. is required to pursue the study of practical medical chemistry in the Laboratory, until he has completed a course of from twelve to fifteen weeks. Supplies are furnished him at the price-current of New York dealers. The average expense is found to be one dollar and ten cents a week for Laboratory students. For detailed account of Laboratory work see page 77.

V. CONDITIONS OF GRADUATION.

Each candidate for graduation must announce himself as such at *the beginning of the second course*, and must at that time undergo a preliminary examination in Anatomy, Physiology, Materia Medica and Chemistry.

To be admitted to the degree of "Doctor of Medicine" in this College, the student must exhibit to the Dean evidence of having pursued the study of Medicine and Surgery for the term of three years, with some reputable practitioner of Medicine, (including lecture terms); must have attended two full courses of lectures, the last of which must have been in the Homœopathic Medical College of the University of Michigan, and the previous one in this or some other reputable Medical Institution; must have been engaged in the study of Practical Anatomy and Practical Chemistry; must be twenty-one years of age; must have submitted to the Faculty a thesis, composed and written by himself, on some medical topic, and have passed an examination, at the close of the term, satisfactory to the Faculty. He is also required, during the course, to submit to written examinations by each Professor, on some subject pertaining to his department, in order to test further his knowledge of such subjects, and his ability to express himself correctly in writing. His final thesis may be written in English, German, French, or Latin; and, if required must be defended before the Faculty. The theses of successful candidates are to be preserved among the archives of the College; those of rejected applicants returned.

It is generally admitted that the course of study in most of our

American Medical Schools is too short to secure the thorough and extended instruction which is to be desired. The authorities of the University are not yet prepared to *require* a longer attendance than they have heretofore asked; but they do earnestly *recommend* students to enter the college early in their course, and to attend through *three* terms instead of through two terms.

Each Professor, on whose instruction the student is required to attend, will, on the completion of the required course of study, and upon the student's giving the necessary evidence of professional scholarship, furnish such student with a certificate to that effect, and the certificate will be laid before the Board of Regents, who will award the Degrees.

All students graduating from the Homœopathic Medical College shall be furnished with diplomas so designated, signed by the President and Secretary, and bearing the corporate seal of the University.

To encourage a higher grade of preliminary acquirements, an allowance of six months from the term of study is made in favor of graduates of the Department of Science, Literature and the Arts, and of other respectable Literary Colleges, in evidence of which a diploma must be exhibited.

Also, an allowance of twelve months is made for graduates of the Department of Pharmacy in this University.

The week preceding Commencement will be devoted to the examination of candidates.

VI. EXPENSES.

The only charges made by the University are: To residents of Michigan, an admission fee of ten dollars, and the annual payment of fifteen dollars; to those who come from other States or countries, an admission fee of twenty-five dollars, and the annual payment of twenty dollars. Further particulars concerning expenses may be found on page 22.

VII. TEXT AND REFERENCE BOOKS.

MATERIA MEDICA AND THERAPEUTICS.—Hahnemann's Materia Medica Pura, Hahnemann's Chronic Diseases, Hempel's Materia Medica, 2d Edition, Hale's New Remedies, 2d Edition, Allen's Encyclopedia of Materia Medica, Hering's Text-book of Materia Medica, Hughes's Manual of Pharmacodynamics, Hughes's Manual of Therapeutics, Hartmann's Observations on Homœopathic Remedies, 1st and 2d Series. *For Reference*, Pereira, Wood, Stillé, Phillips, Ringer, Christison on Poisons, Taylor on Poisons.

THEORY AND PRACTICE OF MEDICINE.—Hahnemann: Organon;* Chronic Diseases; Lesser Writings. Bönninghausen: Repertory;* Intermittent Fever;* Whooping Cough. Jahr: Symptomatology;* Repertory;* Clinical Guide; Forty Years' Practice. Hering: Analytical Therapeutics. Bæhr: Science of Therapeutics.* Grauvogl: Textbook of Homœopathy. Raue: Special Pathology and Diagnostics.* Gilchrist: Surgical Therapeutics. Also, the pathological and practical works of A. R. Thomas, Laurie, Ruddock and Guernsey; and those of Aitken, Reynolds, Flint, Da Costa, Green, etc. Books marked with an * are especially requisite—the selection from similar works being optional.

THE FACULTY

OF THE

HOMŒOPATHIC MEDICAL COLLEGE.

JAMES B. ANGELL, LL. D.,
PRESIDENT.

SAMUEL A. JONES, M. D.,
DEAN.

JOHN C. MORGAN, M. D.

STUDENTS.

Name.	Residence.	Preceptor
Erasmus Edwin Adams,	*Romeo*,	J. Douglas.
Aaron B. Avery,	*Chelsea*,	G. A. Robertson.
James Douglas Baker,	*Cassopolis*,	A. L. Macomber.
Joseph Albert Baker,	*Cassopolis*,	A. L. Macomber.
Juliette Caldwell,	*Chillicothe, Ill.*,	Dr. Smith.
Charles Hercules Dale,	*London, Ontario*,	J. J. Lancaster.
Jacob De Cou,	*Birmingham*,	Faculty.
Willard Doolittle,	*Romeo*,	E. D. Clark.
Sarah Parker Engle,	*Three Rivers*,	Faculty.
John Oscar Garmon, B. S., Ill. Soldiers' Coll.	*Adamsville*,	H. S. Shouse.
Albert Edgar Gesler,	*Hastings*,	E. F. Brown.
John Benj. Hershey, Jr.,	*Fort Erie, Ontario*,	Faculty.
George William Hodgens,	*Monmouth, Ill.*,	Lucy & Fuller.
George Lount Hughes,	*Kalamazoo*,	J. S. Ayers.
Alexander McTaggart,	*St. Thomas, Ontario*,	L. Luton.
Rollin Charles Olin,	*Detroit*,	Faculty.
Warren Harvey Rand,	*Charlotte*,	G. F. Rand.
Alexander H. Rogers,	*Ann Arbor*,	Faculty.
Richmond Simmonds,	*Salem*,	B. S. Knapp.
Eugene Clarence Storey,	*Greenville*,	T. M. Benedict.
George Albert Taber,	*Union Springs, N. Y.*,	O. W. Smith.
Ezra Carpenter Walker,	*Ann Arbor.*	S. Chase.
Samuel Raymond Ware,	*Battle Creek*,	Practitioner.
William Frederic White,	*St. Thomas, Ontario*,	L. Luton.

COLLEGE

OF

DENTAL SURGERY.

I. ORGANIZATION.

At the session of the Legislature, in 1875, in compliance with a request from the Dental Association and many citizens of the State, an appropriation was made for the establishment of a Dental College in connection with the Department of Medicine and Surgery of the University of Michigan.

The Board of Regents at once took measures to secure the objects contemplated, by making the necessary appointments of Professors, besides those furnished by the Department of Medicine and Surgery, where all students in Dentistry attend lectures and receive instructions jointly with the medical class, and enjoy in all respects equal facilities with them.

II. LENGTH OF TERM.

The second session of the Dental College will begin on the 2d of October, 1876, and close on the last Wednesday of March following, thus making a course of six months. The Faculty earnestly recommend that students be in attendance at the opening, as seats are selected in the order of matriculation, and regular instruction commences at once.

III. QUALIFICATIONS FOR ADMISSION.

These are the same as those which secure admission to the Department of Medicine and Surgery, and are as follows: Every candidate for admission must be eighteen years of age, and must present to the Faculty satisfactory evidence of good moral character. Unless already a matriculant of the University, or a graduate of some respectable college, academy or high school, every candidate shall be examined as to his previous education and his fitness for entering upon and appreciating the technical study of medicine. The diploma or certificate of graduation from such institutions must be presented to the Dean of the Faculty by the candidate in order to secure exemption from the examination, which will be in writing and will cover the ordinary branches of an English education.

Examinations will be held at 2 P. M. on Friday and Saturday, September 29 and 30, 1876. Candidates are required to present themselves on one of these days, as they are expected to be in attendance upon the first day of the term, at which time the regular course of instruction will commence. To provide for cases in which it is absolutely impossible for the candidate to be present at this time, supplementary examinations will be held at such times as may be determined upon by the Faculty, but no excuse except of an urgent character will be accepted for failure to appear at the first examination. Certificates of attendance are given for the actual period of attendance only.

Before admission to examination every student is required to present to the Dean of the Faculty the Steward's receipt for the payment of the annual dues. It will therefore be necessary for the candidate to apply first to the Steward at his office in the University Hall, register his name as a student in the Dental College, and pay his fees. In case of rejection the moneys paid preliminary to examination will be refunded by the Steward.

IV. ADVANTAGES OF CONNECTION WITH THE UNIVERSITY.

The Department of Medicine and Surgery, long in successful operation, offers in full the facilities required for the satisfactory study of all branches common to both professions which may be concisely enumerated as follows:

I.—CHEMISTRY.

Recognizing the important part chemical agents play in the diseases of the dental apparatus, the dental student will attend the lectures on inorganic and organic chemistry, besides which he may enjoy the advantage of the chemical laboratory, for the practical study of all those agents or secretions that concern his future needs in the prevention and cure of disease.

The laboratory is a building devoted exclusively to chemistry, furnished with all needed apparatus for any kind of research that may be required. For details of chemical work see page 77.

II.—MATERIA MEDICA AND THERAPEUTICS.

Under this head will be brought in review all the remedial agents the dentist will need to use, with the fundamental principles which will guide their application in practice.

III.—ANATOMY.

The groundwork of our science, whose importance to the dentist can not be over-estimated, will be studied demonstratively and practically. Besides the full course on anatomy which the student will attend with the medical class, special instruction will be given in the anatomy and histology of all that appertains to the oral apparatus. Thereby the dental student can become thoroughly acquainted with the region of his future professional practice, and in this study he must actively participate to make his knowledge of these parts complete.

IV.—PHYSIOLOGY.

Will be so fully discussed and illustrated that the attentive student cannot fail to understand this indispensable foundation for all subsequent study of pathology.

V.—PATHOLOGY AND PRACTICE.

The lectures on pathology and practice of medicine, always thorough and exhaustive in regular medical lectures, will furnish ample means for becoming acquainted not only with the principles but with the details of application.

VI.—SURGERY.

A complete course in this essential branch will fully meet the dentist's needs in the discussion of all surgical diseases, as well as the great underlying principles of surgical practice wherever applied.

VII.—DISEASES OF WOMEN.

Knowing how seriously the conditions of maternity and the provisions therefor often disturb the system, the dental student will be profited by the instruction given in the obstetrical and allied lectures.

In short, we consider the advantages which are offered by a fully equipped medical college of the first importance to the student of dental science, and we regard the attendance upon at least one entire course of medical lectures as the proper foundation for the subsequent study of a specialty. The student may here avail himself of all these facilities for a thorough education, in which the needs of a dentist will receive appropriate consideration.

V. OPERATIVE DENTISTRY.

In this department will be presented the principles involved in the treatment of, and operations upon, the natural teeth and adjacent parts, for their preservation and restoration to health when diseased. This will embrace not only attention to the various affections of the teeth and contiguous parts, but the character and application of the special remedial agents, and the various approved methods of operating in all the details of condition, materials, instruments and appliances.

The student will be required to make his attainments throrough upon all these particulars, in order that he may never be at a loss for a guide in his treatment and manipulations.

VI. CLINICAL.

In this department the aim will be to give the most thorough practical instructions in the operative details, and in the preparations of the instruments and appliances used.

The operating rooms are ample, and well arranged, and fully supplied with all the requisite facilities, such as chairs, engines, etc. All valuable appliances will be made available and instructions in their use given.

The students are required to furnish their own instruments for filling, and these should be selected under the diretion of the clinical teacher.

Every member of the senior class, at least, will be required to spend a part of each day in the clinic room.

The experience of our first session (1875-6) gives great encouragement, for this part of the work, especially in respect to supply of material, and opportunities afforded to the students for practical work. There was in the beginning some solicitude in reference to clinical facilities, and some apprehension was expressed that there would be deficiency in this respect; but this has been shown to be groundless. The applications which have been made for service, during the past term, have been many more than could receive attention; and those applying for treatment and operations were persons who appreciate and value their teeth and have been accustomed to receive the attention of skilled operators. This is regarded as a matter of very great importance to the students; since it affords a valuable stimulus to them, and places salutary restrictions upon them.

VII. MECHANICAL DENTISTRY.

The instruction in this department will embrace everything that will enable the dentist to meet successfully the requirements in supplying substitutes for lost dental organs.

Special reference will be given to the principles involved in the restoration of voice and natural expression of the features.

Practical and valuable modes will be taught, and no time will be wasted upon worthless and obsolete styles.

The students will be required to supply themselves with necessary tools and appliances for the Laboratory.

Special attention will be given to the manipulation and management of the precious metals with reference to their application to dental purposes.

VIII. COURSE OF STUDY.

In the establishment of a College of Dental Surgery in the University, the aim has been to make the curriculum such as will meet the requirements of the students, and the expectations of the dental profession, and promise the largest measure of benefit to the public.

In organizing our new enterprise, we have desired to secure the most efficient means for attaining our object. It is generally conceded that graded and progressive work promises the best results in education; and in accordance with that view, the following classification of studies will be adopted, beginning with the next term, viz:

For the Junior Year—Anatomy, including dissections, Physiology, Elementary Chemistry, Materia Medica and Mechanical Dentistry. These branches must be studied by means of lectures, text-books and demonstrations. Members of the Junior class may hear the lectures of the Senior course when opportunity offers. Upon the branches above indicated the Juniors shall stand an examination at the end of the first term. The character of this examination will determine the entrance to the Senior class. Prior to this examination each student shall make and deposit in the College an artificial denture that shall be approved by the teacher in that branch, and also present a satisfactory practical denture made by himself.

The Senior Year—Shall embrace Pathology, including diseases of women and children, Therapeutics, General, and Special Surgery, Organic and Analytical Chemistry, and Operative Dentistry.

IX. GRADUATION.

The candidate must be twenty-one years of age. He must furnish evidence of good moral character. He must have devoted three years to the study of his profession, in connection with attendance upon a full course of medical lectures. He must attend two full courses of lectures in the Dental College, or one course elsewhere, and the last one here, and we recommend that he attend these courses regularly. He must pursue the study of Chemistry in the Laboratory, or sustain an examination in the studies there pursued. He must submit to the Faculty a thesis upon some subject of his course. He must present for inspection practical operations prepared by himself in the College, and give evidence of his skill and ability in treating those derangements which may be submitted to his care. He must sustain an examination satisfactory to the Faculty in all the branches taught.

A graduate of the Medical College may enter the Senior class, and, if found qualified, may graduate after one year has been devoted exclusively to the study of Dentistry.

X. TEXT-BOOKS.

Operative Dentistry. — Taft's Operative Dentistry, Harris' Principles and Practice of Dental Science, Wood's Dental Surgery.

Operative Dentistry.—Richardson's Mechanical Dentistry.

For books of reference on Medical subjects see page 99.

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ERRATA.

PAGE 93—Line 2, for 1875, read 1876; line 3, for 1876, read 1877.
" 101—Add to names of Faculty, WILL J. HERDMAN, M. A., M. D.